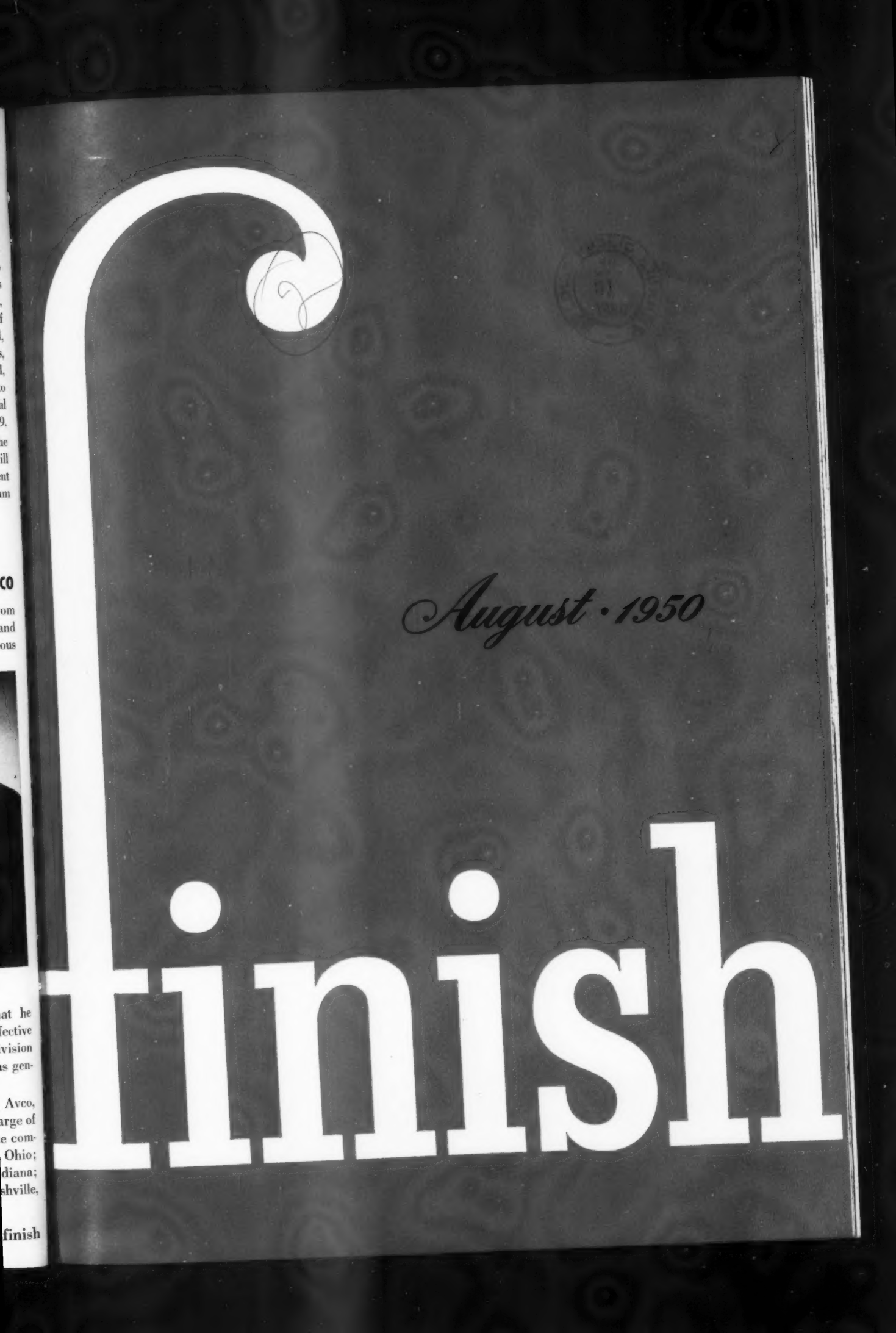
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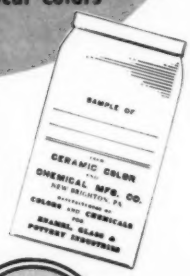

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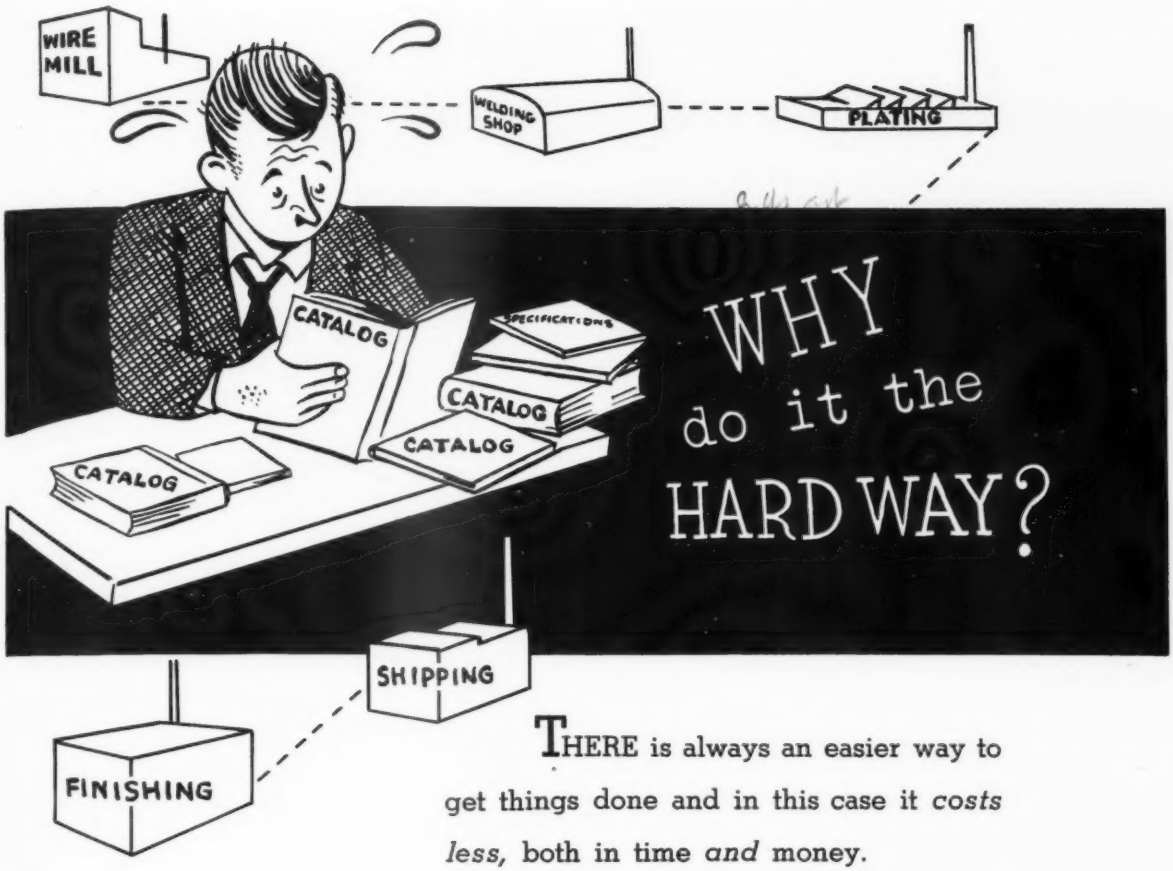

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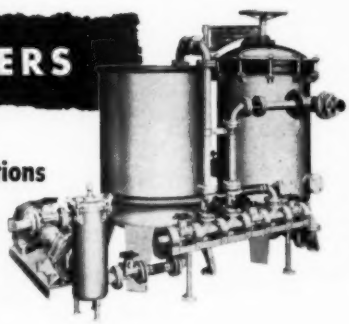

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From the Editor's mail..

overseas interest in "safe transit"

Gentlemen:

We understand from one of our trade friends that you publish the Trade Magazine "Finish" and we are particularly interested in those copies of this magazine which refer to reports of your National Safe Transit Committee. Would it be possible to let us have copies of these publications?

H. S. Reynolds
Head of Order Department
The Hotpoint Electric Appliance Company, Limited
London, England

---

a privilege to participate in "safe transit" program

To Chairman, NST Laboratory Coordinating Division:

We thank you for your letter in which you outline the program of the National Safe Transit Committee . . .

We are happy to inform you that we are now making the necessary preparation and purchasing the necessary equipment in order to be qualified as a certified testing laboratory as outlined in your letter . . .

We feel privileged to participate in your organization's program, which we feel is most practical and worthwhile.

John C. Brill
Vice President
Rathborne, Hair & Ridgway Box Co.
Chicago, Illinois

To NST Coordinating Committee Chairman:

Inasmuch as we are convinced that the success of this program depends upon the voluntary whole-hearted cooperation of all concerned, it will be our continued purpose to endeavor constantly to impress upon our carriers the need for educating their employees in handling appliance shipments with particular care.

John S. Miller, Chief
Freight Claim Section
American Trucking Associations, Inc.
Washington, D. C.

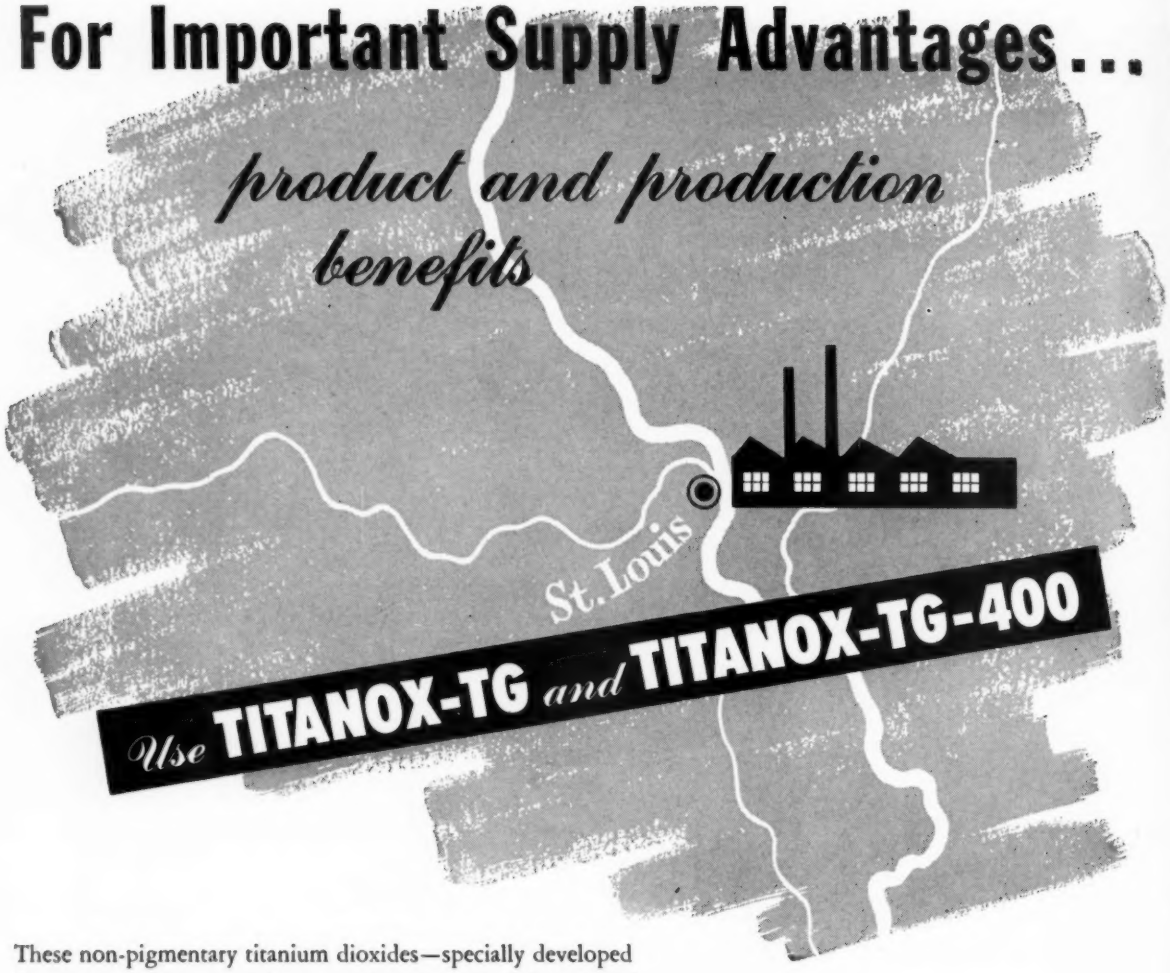
"Storm over Canada" By Dana Chase

Camera: Contax, with F 1.5 coated lens (no filter)—Film: 35 mm XX —Exposure: 125th second at 2.8—Scene: heavy clouds.

TEN DOLLARS will be paid any *finish* reader for a good quality black on white 8x10 enlargement chosen for this page. Sports subjects or plant operations given preference.

For Important Supply Advantages...

product and production benefits



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Modern fabricating and finishing equipment speeds specialized production

demonstrating the effective use of modern fabricating, welding and finishing equipment, plus simplified storage and handling methods, in the quantity production of home heating registers

by Lee Beckman • PLANT SUPERINTENDENT, THE LIMA REGISTER COMPANY, LIMA, OHIO

AS TOLD TO *Dana Chase*

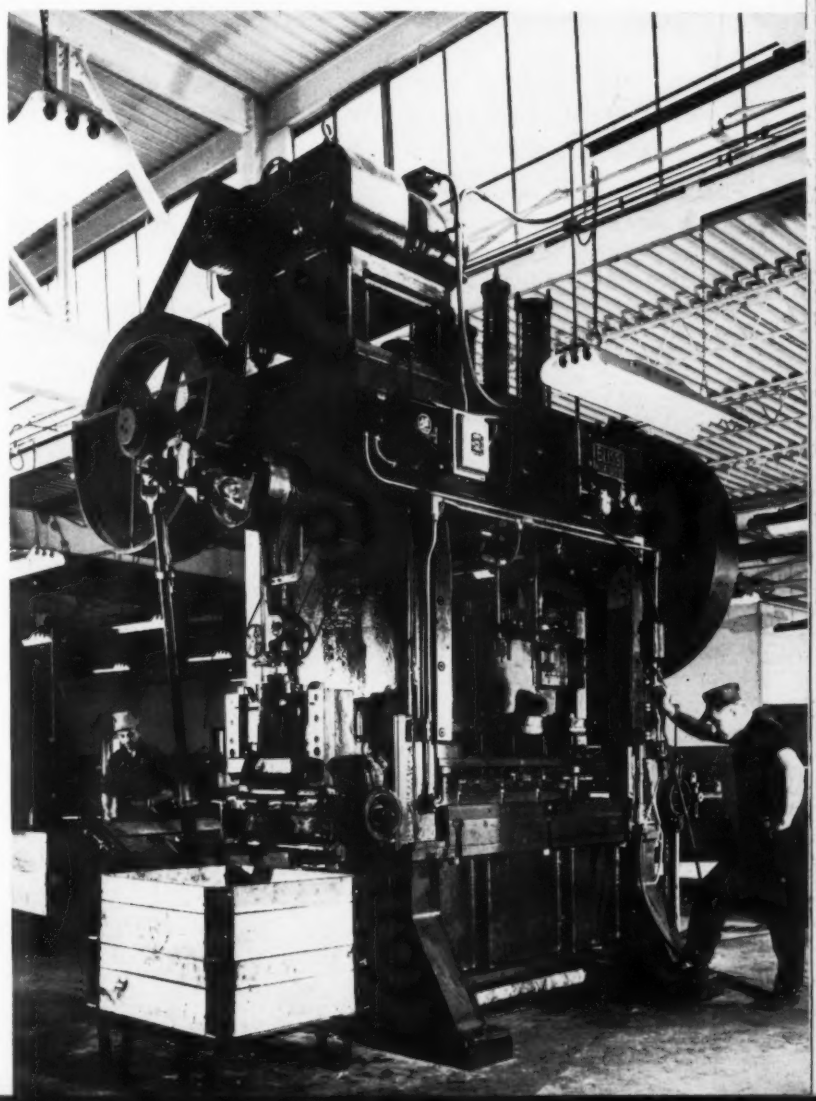
Exclusive feature finish

The average reader of *finish* has probably given little or no thought to the design principles or the production requirements for the floor and baseboard registers and grills and the wall registers which control the circulation of air from a warm-air heating plant to keep us comfortable during the cold winter months. To The Lima Register Company this inconspicuous but only visible part of a warm-air heating system is very important, so important, in fact, that the company has spent freely for the purchase and building of the latest in specialized production equipment to produce a fool-proof register of such great strength that the wheel of a passenger car can be run over it without destroying the fabricated structure.

The story to be told here is one of high-rate production in small plant area, and how it is made possible through the use of specialized fabricating and finishing equipment combined with handling and storage facilities for large quantities of extremely

Editor's Note:

It is not always the large plant which demonstrates the greatest ingenuity in the development of a high ratio of plant production to plant area. This photo-story and brief description is published to show *finish* readers how one company has leaned heavily on specialized equipment and tooling to get high-quantity production from a plant area totaling only 24,600 square feet.



One of the automatic 150-ton high-speed punch presses used with progressive die set-ups. Press is equipped with variable speed transmission and air clutch that operates from 35 to 105 strokes per minute. Press is automatically fed for steel coil. Where man is visible at left, an automatic belt conveyor is transferring fabricated parts to tote box.

Left: Seven-stage progressive die used for the one-piece "valve" on a No. 10 Lima wall register. With this die, the parts drop through the bed of press to a magnetized conveyor belt and feed to a tote box at rate of 58 pieces per minute.

Left below: Here resistance welding unit No. 1 is welding the grid bars together on the floor registers and faces.

Below: Register face after "mash welding" of four corners. 125 frames (500 mitre welds) are produced per hour. Front surface of the frame is flat when welded. The flange is trimmed and formed later. Finished product shows no weld marks.

small parts, and, at the other extreme, heavy coils of steel.

Steel purchased in coils

While some steel is purchased in sheets, most of the tonnage used in the Lima plant is purchased in coils. In width, the steel runs from $\frac{3}{8}$-inch wide spring steel to $18\frac{1}{2}$-inch wide cold-rolled. Gauges vary from 24-gauge to 16-gauge. The facilities at the trucking dock provide for unloading a trailer and semi-trailer of coiled steel in forty minutes. A $3\frac{1}{2}$-ton capacity overhead crane with special cast hook delivers the steel to the storage room. An especially designed motor-operated device has been constructed for turning the steel coils for stacking in storage. A standard "grabber" is used for handling flat sheets.

The many different small components required for the production of wall and floor registers do not have balanced requirements, and this, combined with the high rate of speed at which some of the parts can be produced, lends importance to proper storage facilities for a backlog of fabricated parts. Storage of smallest parts is in portable built-up tote-boxes. These boxes are handled by electric truck and stored on three-tier structural steel storage racks. Runs are usually ten hours on a single item with speeds of 43 to 120 strokes per minute.

Progressive dies speed production

In the production of the "valve" or closure for the register (a typical

Right: This is welder No. 2 in the line. One man operates the machine while others assemble the necessary parts into the precision welding jigs traveling on the circular feed table. Jigs are mounted on rollers to eliminate lifting.

Right below: This resistance welder is welding 7 vertical diffusion fins to the horizontal louvers on the face of a 12" wall register at one time, in this instance making 126 welds simultaneously. Jig is rolled into welder from circular loading table.

Below: Completed assembly shows 16 diffusion blades fused to the cross bars of a 14" wall-type register, representing a total of 144 welds per stroke, or 288 welds for the blades.

production part), coiled steel is fed automatically into a 150-ton mechanical press. The press is equipped with a variable speed transmission and air clutch that operates from 35 to 105 strokes per minute, depending on the size and type of progressive die being used. In the case of the "valve", the press progressively stamps, forms the hinge, embosses, and flanges at the rate of 58 strokes per minute.

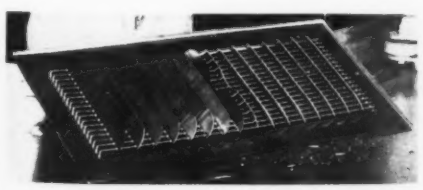
A five-stage die stamps "faces" for wall registers, punches mounting holes, and forms 18 individual louvers in the face in a single operation.

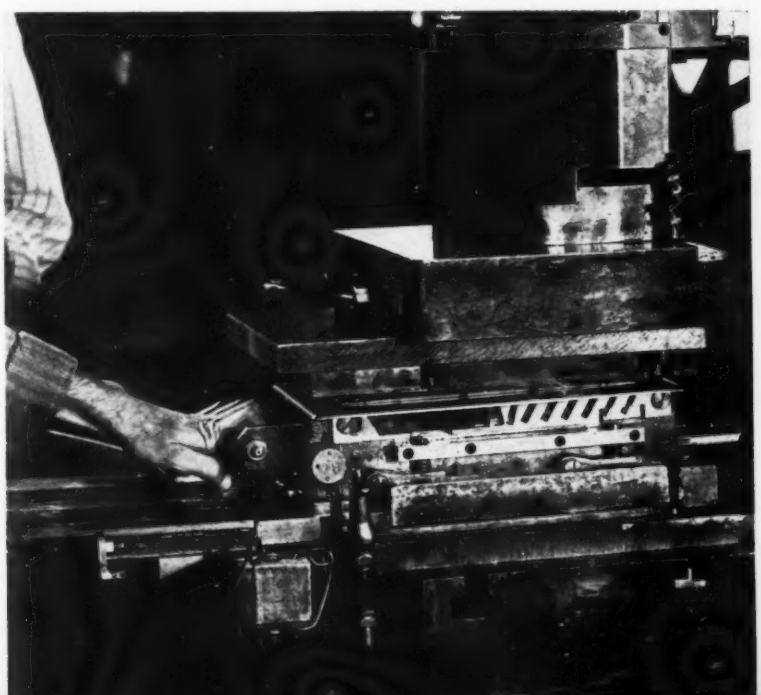
Small parts, such as grid bars for register valves, etc., are produced on high-speed presses at rates up to 240 pieces per minute. As fabricated parts leave the presses, they drop to magnetized endless conveyor belts used to load the tote-boxes. By careful planning of production requirements for the various components, sufficient runs can be made on each part to make frequent die changes unnecessary. This also tends to minimize the number of presses required in relation to the quantity and variety of parts produced.

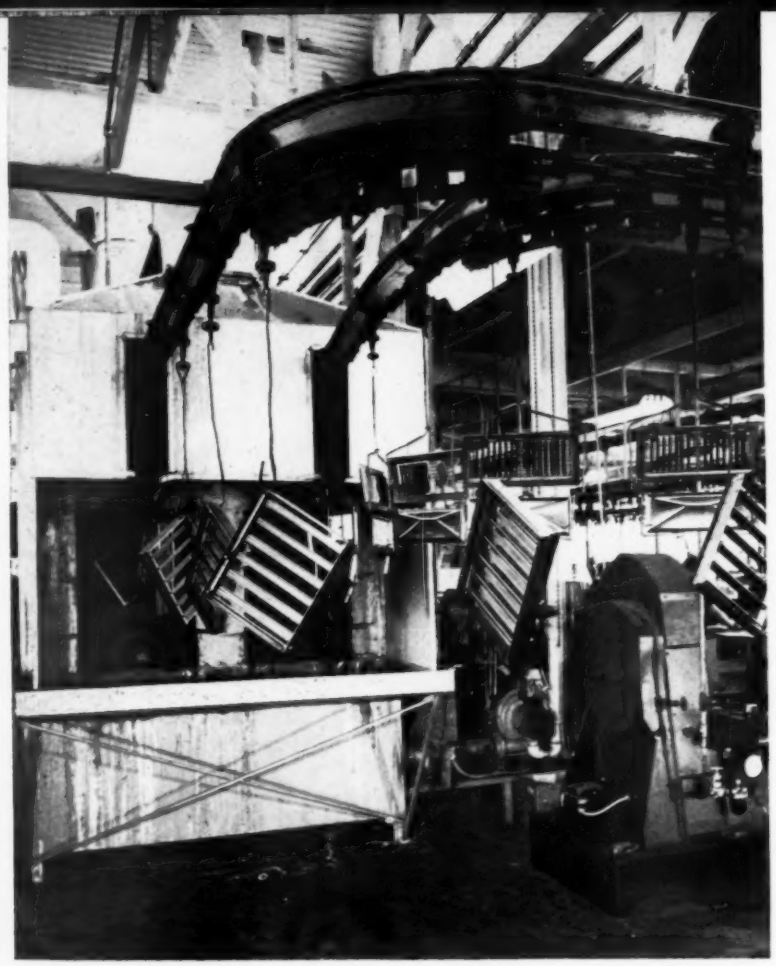
One of the most interesting sections of the plant includes a battery of four electronically controlled resistance welders, lined up to combine the many small parts composing a register face into a single integral unit.

Precision jigs simplify welding

Floor registers are made in various sizes from 6" x 12" to 14" x 30". Material used is 16-gauge cold rolled steel. The three main welding oper-







ations consist of: welding cross bars together, upsetting cross bars on ends of frame, and "mash-welding" mitred corners.

In welding cross bars and upset-welding cross bars to frame, all cross bars are preloaded in fixtures, positioned edge to edge in slots and are welded in two strokes—a total of 36 welds per stroke. One operator produces approximately 250 of these mats per hour. A special welder is then used to upset cross bar ends to the frame. The ends project through slots in the frame and are fused to the frame itself. Four operations—one for each side—complete this job, and approximately 130 of these assemblies are produced per hour.

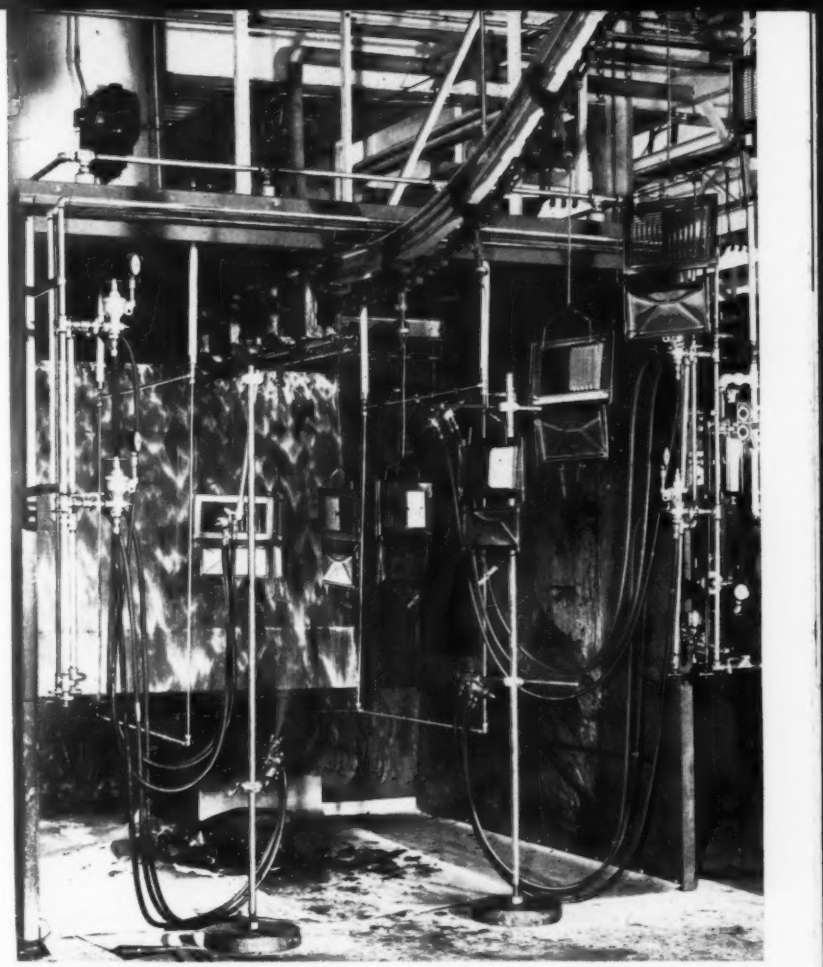
In "mash-welding" mitred corners, the four corners of the frame are fused by a mash-projection operation. This produces a strong joint which, when lightly ground and painted, is practically invisible. 125 frames (or 500 mitre welds) are produced per hour. The front surfaces of the frame are flat when welded, and a flange around the edge is formed after welding.

Left above: Register parts entering automatic washing machine. This 5-station machine provides for pressure spraying of all solutions. The first two stations are for cleaning, the third for rinse, the fourth for phosphate coating, and the fifth is for drying.

Left: The 100-foot-long elevated baking oven leaves ample room for floor storage of heavy die sets. The oven utilizes convection-type heating and is designed for careful control of exterior and interior air intake. The baking cycle is 12 minutes at 350° F.

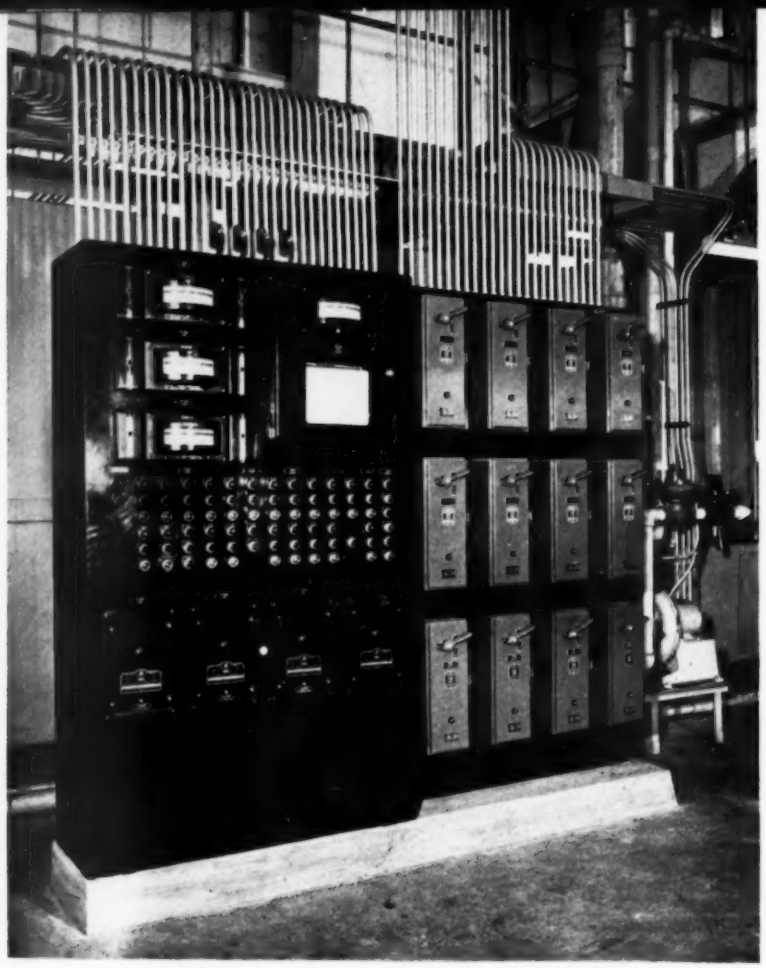
After mash-welding, corner welds are buffed for smooth finish. Floor registers are returned to 150-ton press for trim and joggle.

Wall registers are composed of a face stamping of 20 gauge steel to which are welded fins of 24 gauge material. The horizontal cross bars are cut and turned in a stamping operation, a time and material saving design, inasmuch as this unit is not required to support weight. Sixteen diffusion blades are welded to the cross bars in two strokes (eight fins per stroke). Two strokes are used because eight fins are welded at one angle and the other eight at the opposite angle. A special 6′ "round table" jigging set-up is positioned in front of the machine in order to feed the operation. Four identical jig set-ups ride on the circular feed table, so that three loaders can be feeding parts to the jigs and one man unloading while one man operates the welder. Registers are fed into the portable jigs, parts added, and jigs tightened before reaching the welder. Eight diffusion blades are welded simultaneously, with a total of 144 welds.



Right above: Register parts passing through one of the automatic electrostatic spray booths. Parts revolve as they pass through electrostatic field. Three guns serve each booth, applying a single uniform coating of metallic-base synthetic enamel. No operator is required, except for one type of special finish which calls for an overspray following the standard finish.

Right: Dual oven conveyors feed a belt conveyor which serves inspection, assembly and packaging stations. Boxed registers leaving this conveyor are ready for shipment.



As the register leaves the welder it is reversed in the jig, and a second set of eight blades inserted in the opposite end. Thus, when the second round is completed, 288 welds have been made in two welding operations. The jig or fixture is designed to roll into welding machine so that no lifting is required of the operator. This complete welding operation can be accomplished at the rate of 375 assemblies per hour.

Another welder has a similar jig assembly and circular table for completing 16 simultaneous welds, including three angles and one hinge angle along the four sides of the register.

Following these operations the wall register goes to a small specially built hydraulic press with a triple-headed punch die, used for inserting a "locking tube" in the center of the register. This locking tube is used for locking the control chain in place.

Welder No. 4 is used for floor registers. It also uses portable jigs and circular feed table. The frame for a floor register is placed in a jig, and louvers, sliding channel, and op-

Left above: Central control panel for the plant, which automatically controls the washing machine, conveyors, electrostatic spray booths, and the temperature of the baking oven and solutions in the wash tanks. Safety control devices and warning signals are provided.

Left: Method of storage and handling of the many small components comprising the complete register units. Storage racks are of steel to support heavy loads, and tote boxes are sectional.

erating lever are inserted. All of one side of this assembly is welded the first time through the welder, the assembly is reversed in the jig and then the opposite side welded the second time through. Corner welding then completes the assembly.

The welding department is equipped with a complete air suction system, with an outlet at each operating station.

Continuous lines through cleaning and finishing operations

Two conveyor lines, one for wall registers and the other for floor registers, carry the parts through cleaning, phosphating, spraying and baking.

All fabricated parts are inspected, and hung on one of two conveyor lines leading to the automatic power spray cleaner installation. The cleaning equipment consists of a 5-station machine, in which the parts are first washed with alkaline cleaner at 150° to 170° F. The second station consists of a re-wash of alkaline cleaner at 150° to 170° F. The third station

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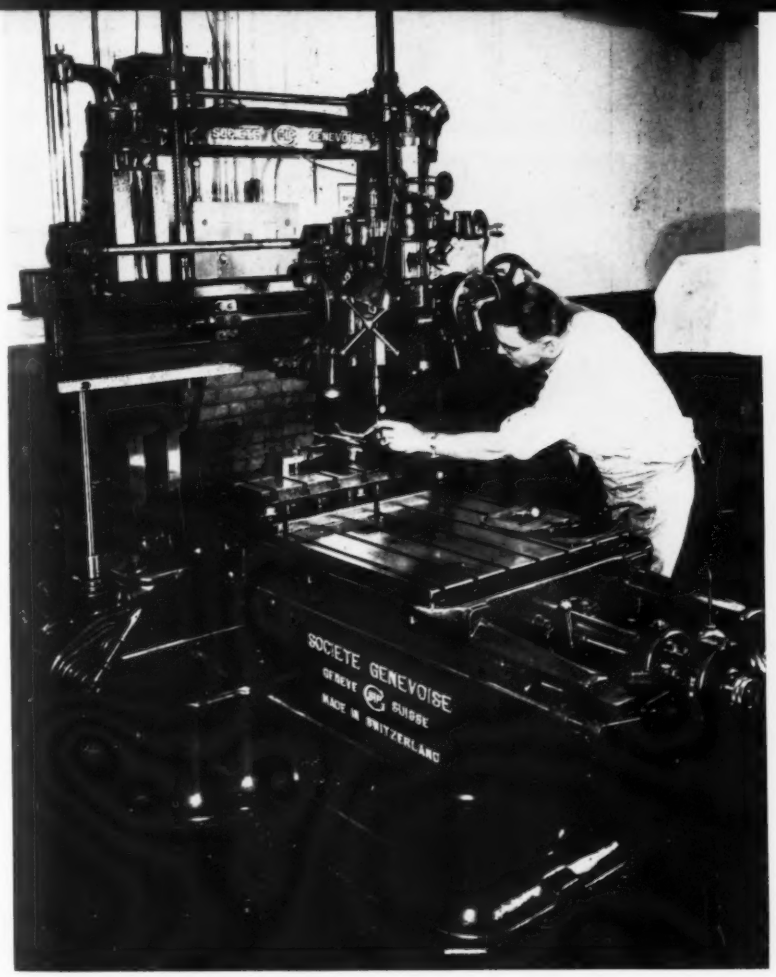

Right above: This Swiss jig boring machine is one of the many precision machines used to produce the highly specialized dies needed to fit the production requirements at the Lima plant.

Right: This photo shows one of the finished products of The Lima Register Company ready for sale. The photo is from a special sales movie designed to tell a product story to the merchant contractor.

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The importance of pre-testing to home appliance production

quality testing costs money but pays off in business insurance

by J. C. Sharp • VICE PRESIDENT, ENGINEERING, HOTPOINT, INC., CHICAGO

Exclusive feature finish

Leading brands of electric kitchen and home laundry appliances are one of the best bargains on the market, with retail prices up less than 50 per cent above the pre-war level. For this price increase, consumers are getting more in quality and features than ever before. Yet many dealers are failing to "sell quality" now, in preparation for the period of keen competition that is approaching.

For the average consumer, an appliance purchase is a long-term investment. With the public generally informed on the need for appliances in modern living, it has also become more conscious of quality merchandise that will give years of trouble-free service. Pride in appearance is an additional factor that will influence buyers in their choice of an appliance. Consumers now "go below the surface" when considering the purchase of an automatic electric dishwasher, a range, or a refrigerator that may cost them in the neighborhood of $300.

This calls for more extensive product knowledge on the part of the salesman in dealing with customers who are becoming increasingly sophisticated in their buying habits. They are likely to inquire about the hinges on the oven door; the durability of the pump, hose, or automatic control on the washing machine; how long the pushbutton switches on the range will last; and other details which spell quality.

Housewives are experienced

This broader knowledge of appliances indicates that automatic home equipment now is considered indispensable as automobiles. Many housewives have had 20 years experience with electric refrigerators, and they

This machine life-tests the oven door hinge bearings. The door is opened and closed 50,000 times which gives range owners assurance of maximum door efficiency. Here, J. C. Sharp, the author (left), watches the testing apparatus.

Left: Owners of automatic washers w to know how well the appliance does job. Engineers find this out when th smear samples of different fabrics wi grease, carbon or oil, and wash the pieces of cloth in the machines. T material is tested before grease is a plied and after it comes out of t washer to determine efficiency of app ance in cleaning clothes.

Below left: Cooking units for the ra must be safe. Engineers subject the sulation to 1350 volts, or more than times greater than experienced in norm home usage.

Below: Stroboscopic light makes it po sible to examine fast moving parts in automatic dishwasher. This light pro duces several hundred flashes per mi ute and when engineers focus it on moving parts of the washer it creates illusion of stopping or slowing the mo tion. Thus engineers can check the mo ing parts during complete washing cy

know what to look for in new models.

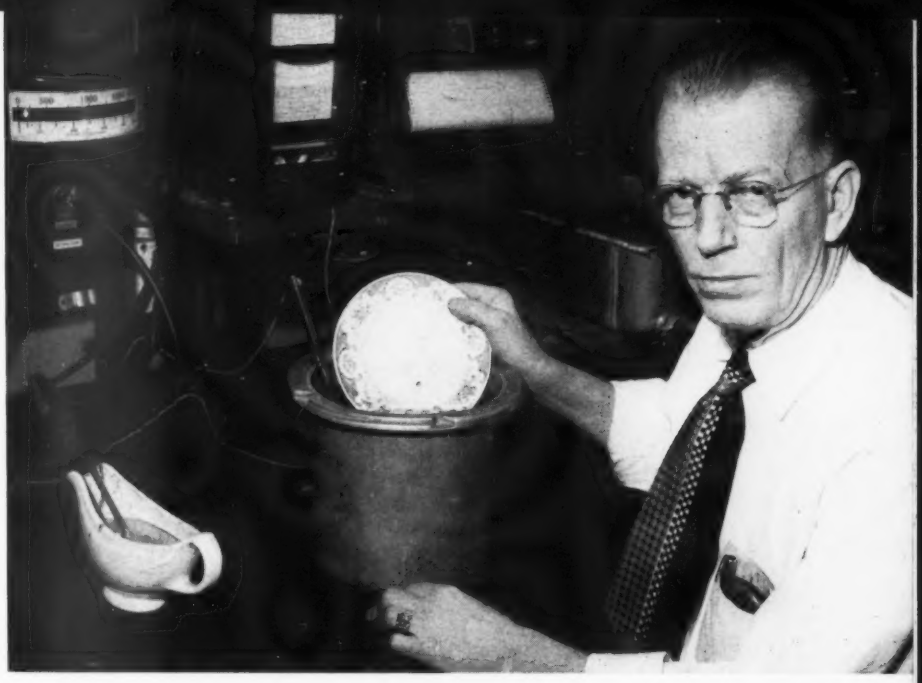
In some instances salesmen will be asked questions considerably more remote than the foregoing. However, selling a curious prospect short may mean losing a sale to a competitor. One of the best ways for a retailer to "learn" his appliances is to use them in his own kitchen.

Generally speaking, appliance dealers take for granted the quality the manufacturer has built into his appliances. Yet continuing consumer surveys indicate that the reputation of the manufacturer — another way of saying quality — ranks high in the choice of an appliance. Dealers can capitalize on this reputation and arm themselves with complete knowledge about hidden features as well as the more obvious ones that can readily be dramatized. While demonstration is fundamental in selling appliances, the far-sighted dealer will go beyond the outer selling rim for additional sales ammunition to merchandise quality as competition increases.

Right: Engineers at Hotpoint helped a dealer when a customer complained that the hot water used in her automatic dishwasher broke and crazed dinner ware. The research men plunged various types of dinner ware into molten lead (365° F.) and then into cold water (45° F.). No damage resulted, indicating that dishes will withstand differences in temperature far in excess of those found in dishwashers.

Below right: Pushbutton switches for the range get a gruelling test when they are hooked up to this specially designed mechanism. To simulate 15 years of home use, each button is pushed 60,000 times, making and breaking the electrical loads they will be called upon to control in a range.

Below: Discharge pumps on the automatic dishwasher are checked on this machine which indicates the life expectancy of these important parts.



But before dealers can talk quality they must know what it is and what manufacturers do to build quality into their appliances. Building quality into an appliance is an important phase of production that helps assure continued profits for the retailer. Put another way, quality is the factor that gives equipment durability, and gives customers many years of dependable, satisfied service.

Pre-testing—an important factor

In appliance production, pre-testing is one of the most important factors in checking quality. Before introducing a new appliance, leading manufacturers put it through gruelling tests conducted by a staff of engineers. At Hotpoint, these tests include exhaustive checks of the overall operating efficiencies of the component parts of each appliance. As an illustration, engineers test the rubber hoses used in the dishwasher and the automatic washer. A laboratory

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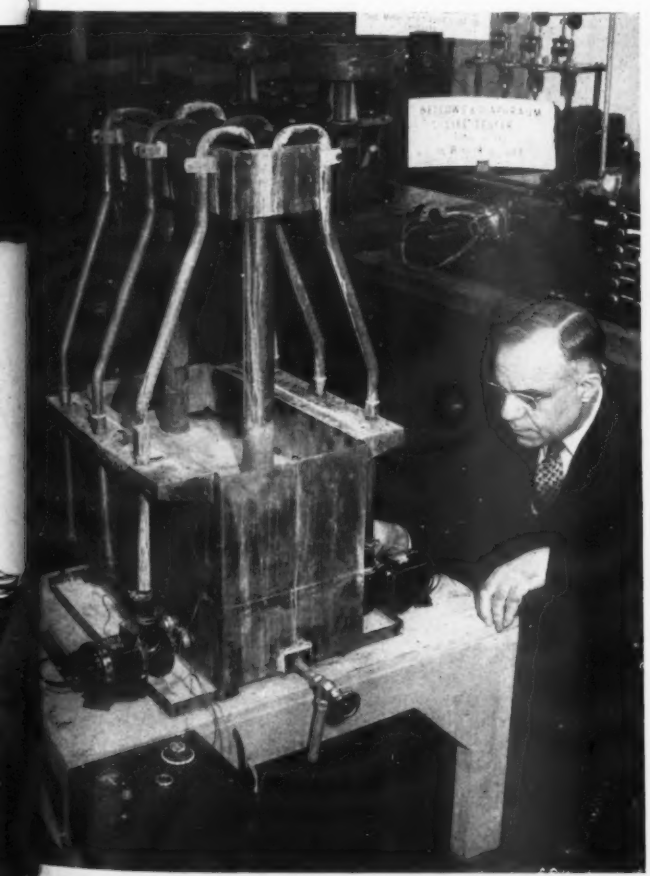

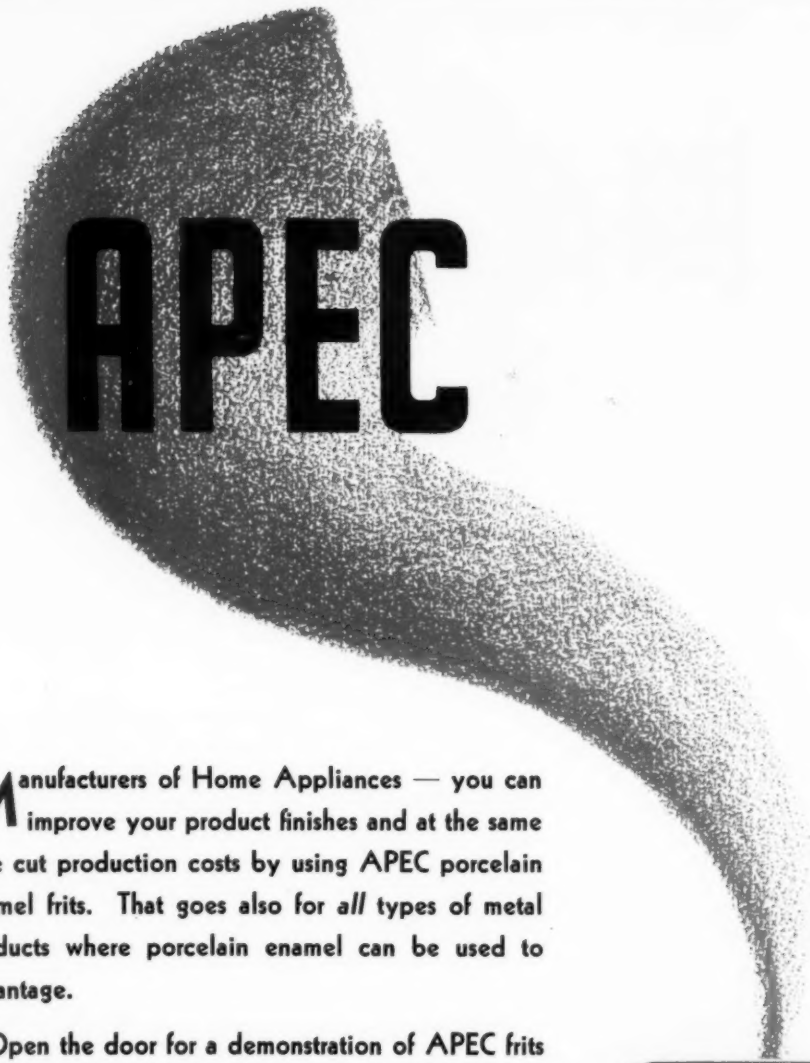

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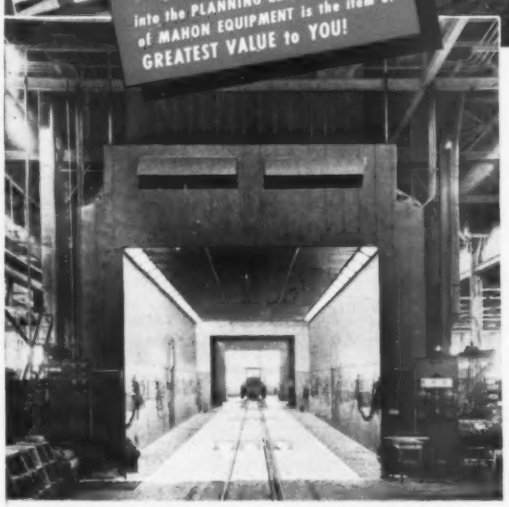


Complete Mahon Finishing System specially planned and engineered to meet the production requirements of Caterpillar Tractor Co., Peoria, Ill., manufacturers of Diesel Engines, Tractors, Motor Graders, and Earthmoving Equipment.

"Caterpillar" Diesel Tractors, Earthmoving and Road Building Equipment Painted in a Mahon System!

After purchasing several units of Mahon Finishing Equipment, which included Cleaning and Pickling Equipment, Spray Booths, and Drying and Baking Ovens, it was only natural that "Caterpillar" should turn to Mahon for a complete finishing system to handle painting of their Tractors, Motor Graders, and other units of heavy road building equipment on a straight line production basis. Mahon's solution to "Caterpillar's" requirements is illustrated above . . . it is a Complete Finishing System embodying a Cleaning Booth and a large Down-Draft, Tunnel-Type Spray Booth with an Integral Air Supply System which is controllable for volume and temperature. You, too, can reduce finishing costs with modern Mahon equipment planned and engineered to meet your specific requirements. If you are contemplating new finishing equipment, remember that the Mahon organization has pioneered development in this highly specialized field for over thirty years—and that Mahon engineers have, through constant research and experimentation, accumulated a wealth of technical knowledge and practical know-how not available to you elsewhere. See Mahon's Insert in Sweet's Mechanical Industries File, or write for Catalog A-650.

THE R. C. MAHON COMPANY

Home Office and Plant, Detroit 34, Mich. • Western Sales Division, Chicago 4, Ill.

Engineers and Manufacturers of Complete Finishing Systems—including Pickling Equipment, Metal Cleaning and Rust Proofing Equipment, Dry-Off Ovens, Hydro-Filter Spray Booths, Filtered Air Supply Systems, and Drying and Baking Ovens. Also Core Ovens, Hydro-Foam Dust Collectors, and many other Units of Special Production Equipment.

MAHON

New developments in porcelain enameling

including the "pros and cons" of low temperature enamels and the outlook for color

by Burnham W. King • THE HARSHAW CHEMICAL COMPANY, CLEVELAND, OHIO

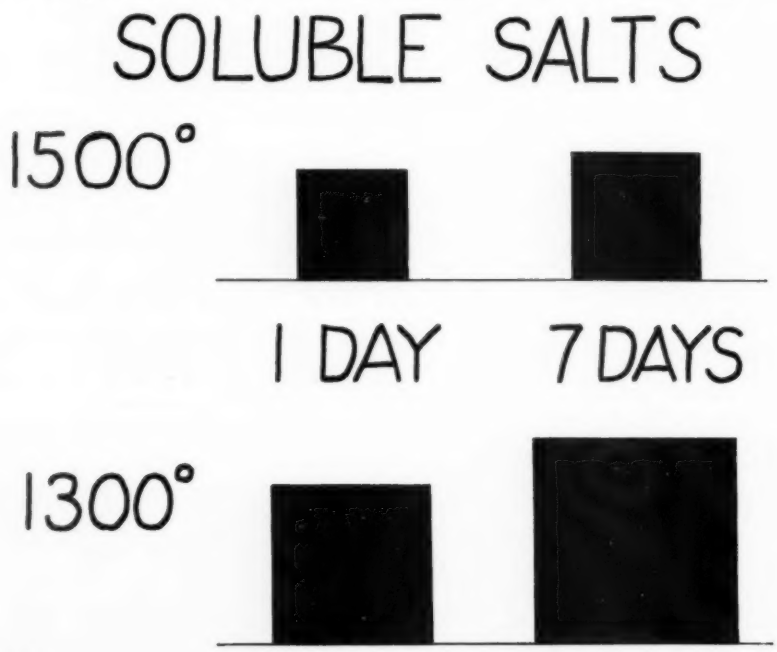
ONE of the important new developments in the porcelain enamel industry has been the use of low temperature (1300°F.) sheet steel enamels. Frits of this type were used exclusively by the Lustron Corporation and as a result received considerable publicity. In view of the relatively small amount of frit actually used, considerable progress was made in the development of these new types. Their general usefulness is still an open question. What can be done with 1300°F. enamels is probably best shown by reviewing the various types available.

Low temperature (1300° F.) ground coats

First, let us consider the ground coats. These compositions can be made with good adherence over a surprisingly wide firing range although others will show a loss of adherence on the cover coat fire and must be checked carefully for this reason. The use of a nickel dip is helpful in promoting adherence and for some grades of steel it is probably essential. The greatest difficulty with enamels of this type is their relatively high solubility and the resulting unfavorable effect of the salts on surface and handling characteristics. The salts tend to roughen the fired surface and may show lines where they concentrate during drying. The enamel slips are more difficult to maintain at a consistency which will give uniformly good results for dipping. However, much work is being done to correct this fault and progress is being made.

Chart No. 1 shows the relative amounts of total soluble salts in the mill liquors of standard 1500°F. ground coats and 1300°F. ground coats.

Chart 1 — This shows the relative amounts of total soluble salts in the mill liquors of standard 1500° F. ground coats and 1300° F. ground coats.



Low temperature cover coats

A wide variety of cover coat enamels are available for use at 1300°F. Included are clear Class A to stainless acid resistant frits which can be used with mill addition colors; zircon type enamels with high opacity, and medium opaque enamels having fairly good acid resistance. To date there has been no composition produced which is as generally satisfactory as the super opaque titanias which are available at higher firing temperatures. Titania enamels which will fire in this (low) range tend to have rather poor chemical durability either as regards the acid or the alkali resistance. Some relatively expensive compositions have been produced but their use is limited for economic reasons. The problem of the soluble salts present in the mill liquor of the cover coat enamels is not as serious as it was in the case of the ground coats. Cover coats do not need to have the flow of ground coats and less soluble compositions can be used.

One coat finishes in color at low temperature

One coat enamels firing at 1300°F. offer considerable promise. The opacity of the white enamels of this type is usually moderate, but colors can be produced ranging from light ivories through pastel shades to the dark colors. The adherence of these enamels is good. Uniform cleaning, pickling, and nickel application are essential for best results. Also uniform firing is necessary to avoid variation in the lighter colors. As would be expected with a light colored one coat enamel, the beginning of overfiring produces a dark discoloration.

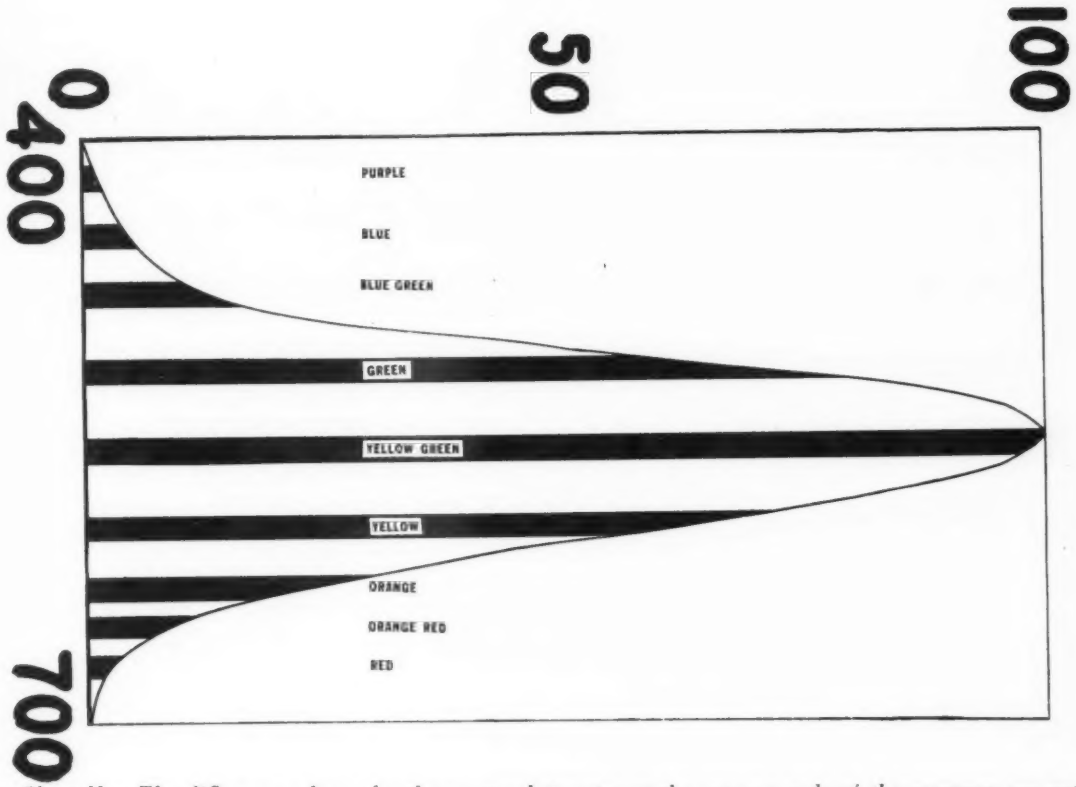
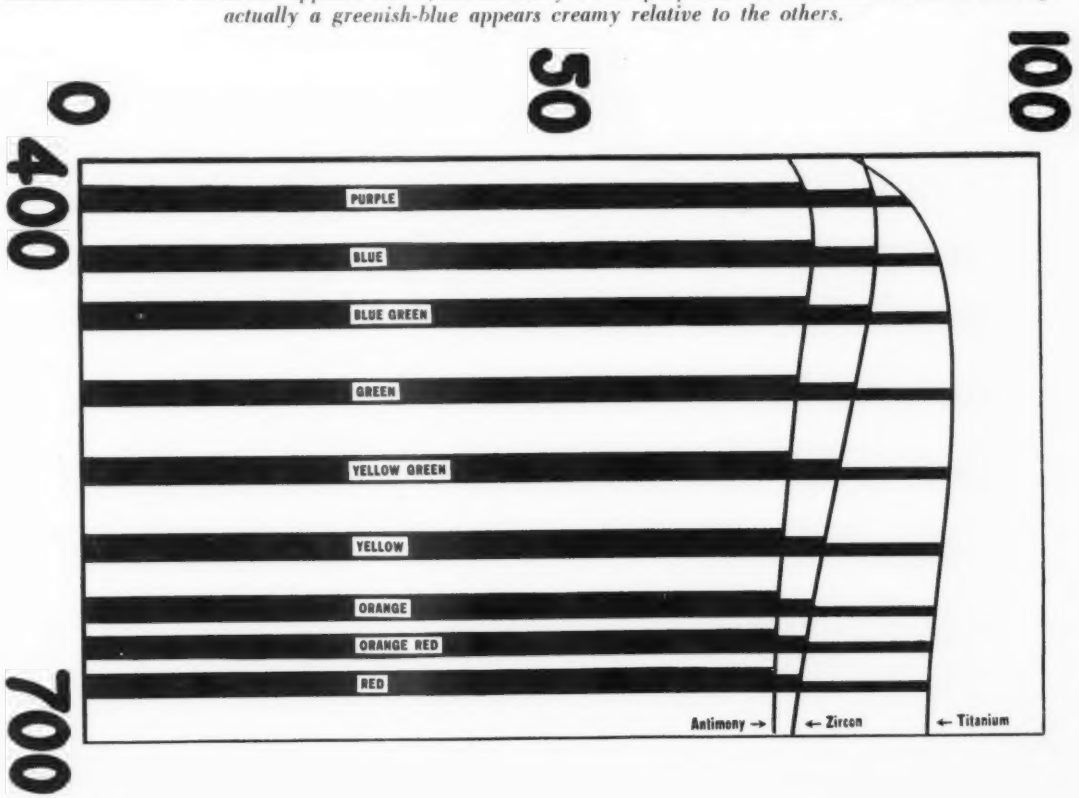


Chart II — The differences shown by the spectrophotometer at the extreme ends of the spectrum are not readily noted by the eye but differences in the center section are noted very easily.

Chart III — This chart shows the comparison between a zircon white, an antimony white, and an untinted titanium enamel. The zircon appears bluish, the antimony a little purplish, and the titanium enamel although actually a greenish-blue appears creamy relative to the others.



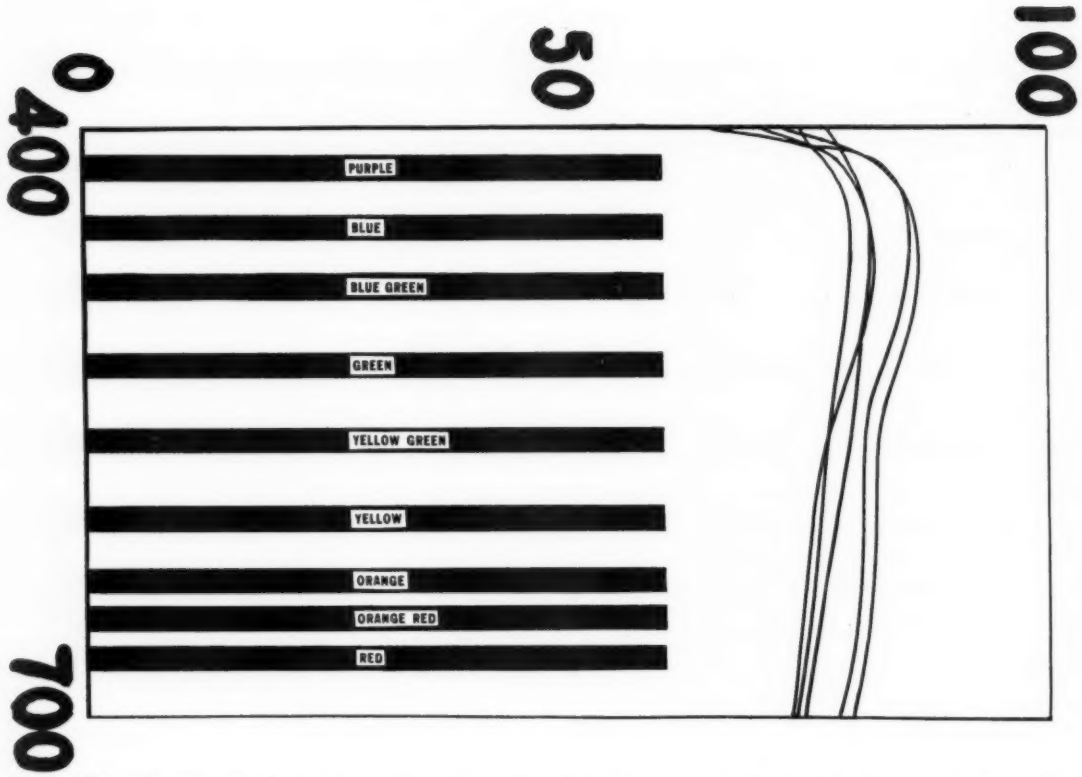
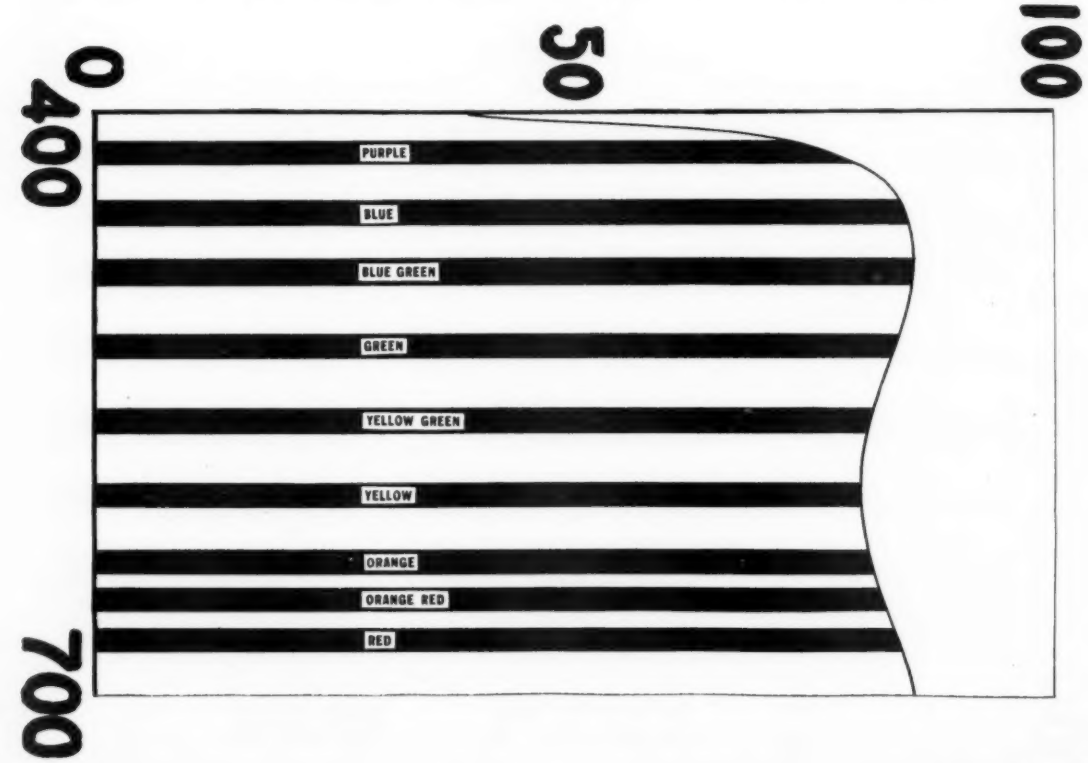


Chart IV — In general, the tendency in color corrected titanium enamels is to make the enamels more blue or more purple, the latter effect usually being accomplished by the addition of gold-pinks.

Chart V — It is interesting to see what is done with white lacquers. Such whites are relatively low in green, yet to the eye they look like very good whites. Probably enamel standards will show a gradual shift in this direction, but any such shift will be limited by the enamels and the pigments available.



The use of 1300°F. enamels has many obvious advantages and also some disadvantages.

The advantages lie in the use of cheaper grades of steel, less warpage of complicated shapes, possible use of lighter gauge enameling stock, and lighter burning equipment.

One disadvantage lies in the fact that at 1300°F. the heat transfer by radiation is much less rapid than at 1500°F. This means that with our present furnaces, firing times must be increased for the same type of ware.

Therefore, at present, 1300°F. enamels offer the most promise for complicated light gauge shapes which cannot be fired at 1500°F. without excessive warpage or for very simple shapes such as flat sheets which heat evenly and can therefore be fired by operating the furnace at near normal temperature but greatly reducing the firing time. The handling properties of these enamels are still somewhat of a problem compared to standard compositions, but these difficulties will probably be taken care of as the enamels come into more general use. The other big problem is the development of a 1300°F. cover coat as satisfactory and as generally useful as the titania enamels now being used at standard firing temperatures. However, even at the present time 1300° enamels offer considerable promise for special applications where standard enamels are unsatisfactory for some reason or applications where porcelain enamels never could be used before.

The trend in "standard" enamels

One outgrowth of the development of 1300°F. enamels has been that considerable pressure has been exerted to lower the firing temperature of standard enamels. The first step along this line was the development of high speed ground coats. Next has come a gradual shift toward more easily fusible cover coats. Frequently this has not meant an actual lowering of firing temperature in the plant but rather an increase in chain speed and a shorter firing cycle with a resultant increase in production. This change is still underway and already there is some interest in the actual lowering of firing temperatures in order to cut down warpage. So probably in the immediate future we will see some changes in this direction.

In any discussions of new development in porcelain enameling, the use of cover coat direct on steel should at least be mentioned. One coat white enamels have long been an ideal of the enameling industry. I would like to emphasize the need of close control over the whole operation. Individual companies should not attempt such a program unless they have excellent shop control, or the results may be disastrous, both to themselves and the industry.

Fluctuating standards for white enamels

With the commercial development of titania enamels, a sudden change in viewpoint has been possible in the enameling industry. For years our white enamels were not white enough unless applied in relatively thick coatings. Now we have more reflectance than we need and the emphasis is on color. We have blue whites and cream whites and a great variety in between. At one time antimony whites were the standard of the industry. Then with the development of zircon enamels there was a gradual shift to the bluer white possible with this type. At the present time, the zircon blue white standards still prevail and considerable money and effort have been expended in making titanium enamels conform to these standards. These efforts have not been uniformly successful. The result is that our standards are in a somewhat chaotic state and yet to attain them, as much as ten per cent in reflectance is often sacrificed.

Use of spectrophotometer

One of the best ways to describe colors is by the use of spectrophotometer curves, which show the amount of color of each wavelength present. The spectrophotometer is an excellent instrument but an impartial one. It responds equally well to all colors. Thus a true white which contains all colors appears as a straight line on a spectrophotometer curve. The eye, however, is much more sensitive to green light so that the differences in color to which we are most sensitive are the ones in the middle part of the spectrum. (Chart No. 2). Therefore, differences shown by the spectrophotometer at the extreme ends of the spectrum are not readily noted by the eye but differences in the center section are noted very easily. With this in mind let us consider some white enamels. (Chart No. 3). A zircon white is compared with an antimony white and an untinted titanium enamel. The zircon appears bluish, the antimony a little purplish and the titanium enamel although actually a greenish-blue appears creamy relative to the others which are much lower in reflectance and lower in the yellow and red end of the spectrum. Now let us consider some color corrected titanium enamels which are now used as standards by a large section of our industry. (Chart No. 4). In general, the tendency is to make the enamels bluer or more purple, the latter effect usually being accomplished by the addition of gold-pinks. The reason behind this is that if a white cannot be a true white then a purple white is the one that looks cleanest to the eye. This is because less green light is reflected and the eye noting this lack of color assumes the object to be white. It is interesting to see what is done with white lacquers because strong but less stable colors may be used in these coatings. (Chart No. 5). Such whites are relatively low in green and yet to the eye they look like very good whites. Probably our own standards will show a gradual shift in this direction, but any such shift will be limited by the enamels and the pigments available.

The enamel industry is subject to many cycles and one of these concerns the use of color in decoration. We have been through a period when white or black and white have been used exclusively and now there is a swing starting towards the more general use of colors.

This review of new developments in porcelain is not intended to cover all new developments in the field but only those now of special interest.

Adapted for *finish* from a paper before the Central District Enamelers Club.

GAS RANGE SHIPMENTS REMAIN AT HIGH LEVEL

Shipments of domestic gas ranges for the first five months of 1950 totalled 1,111,000 units, according to a report of the Gas Appliance Manufacturers Association. This was 64 per cent greater than the 677,600 units shipped in the same period of 1949, and compares favorably with the 1,206,400 shipped during the like period in 1948, the all-time peak year.

Domestic gas range shipments during May totalled 227,000 units, an increase of 49.7 per cent over May, 1948, it was reported.

RESISTANCE WELDING MACHINE ORDERS UP 44.6 PER CENT

The Resistance Welder Manufacturers Association has reported that orders received by Association members for resistance welding machines for the first five months of 1950 were up 44.6% over the same period for 1949. Orders for the month of May were 26.5% greater than for April, and the backlog of unfilled orders on hand May 31 advanced 17.7% over the end of April, it was stated.

PRESSED METAL INSTITUTE LISTS NEW MEMBERS

The Maytag Company, Newton, Iowa, and Hart Pressed Steel Corp., Elkhart, Indiana, have joined the Pressed Metal Institute as active members, PMI has reported. New associate members of the Institute include Allied Institute of Technology Division, Allied School of Mechanical Trades, Chicago; Lafayette Steel Co., Detroit; and Sebastian N. Sloan, Toledo.

U. S. INTERNATIONAL TRADE FAIR IN CHICAGO, AUGUST 7-20

The First United States International Trade Fair will be held in Chicago, August 7 through 20. Requests for exhibition space should be addressed to First U.S. Int'l Trade Fair, Merchandise Mart, Chicago 54, Ill., or to 65 West 54th St., New York City.

PAINT INDUSTRIES MEETINGS SCHEDULED FOR NOVEMBER

The 62nd annual convention of the National Paint, Varnish and Lacquer Association will be held in San Francisco, November 15-18, with headquarters at the Fairmont Hotel.

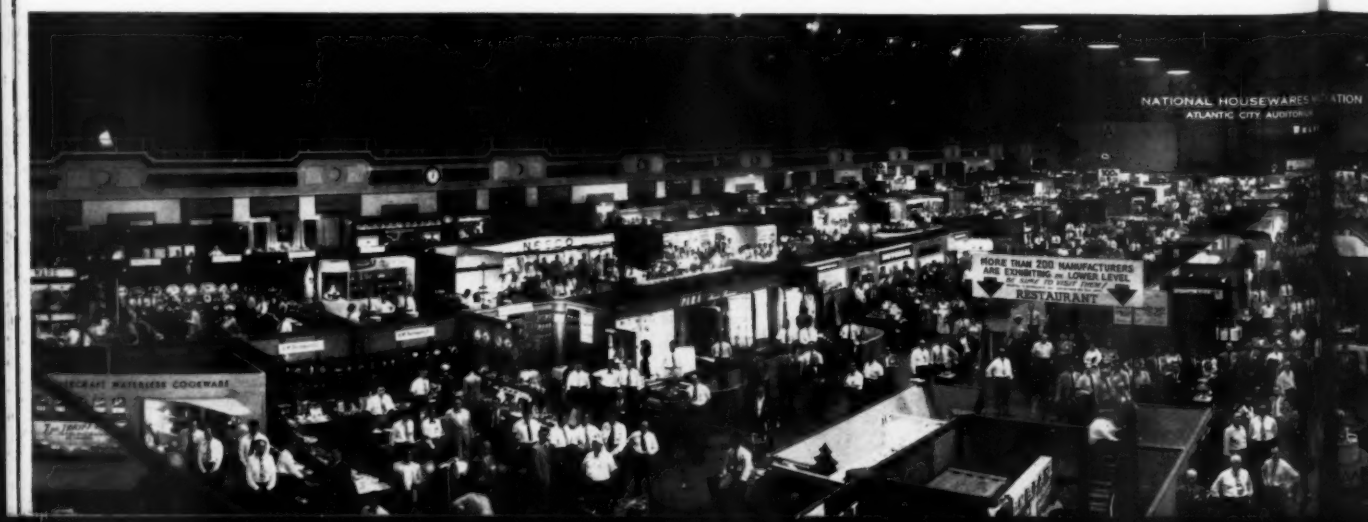
The 28th annual meeting of the Federation of Paint and Varnish Production Clubs is scheduled for November 9-11, Chicago, with headquarters at the Congress Hotel.

ADMIRAL PLANS PRODUCTION OF 1500 REFRIGERATORS A DAY

Plans for the production of 1500 refrigerators daily at their recently acquired plant of Midwest Manufacturing Co., Galesburg, Ill., have been disclosed by L. H. D. Baker, vice president in charge of appliances, Admiral Corporation.

Baker confirmed a previous report that an additional 100,000 square-foot addition to the Galesburg plant is being constructed by Admiral for the purpose of manufacturing their own refrigerators *(June, 1950, finish)*, along with Midwest's present kitchen cabinet line.

It was stated that Admiral will



eventually move its refrigerator cabinet building operation, now being run under contract in Connersville, Indiana, to Galesburg in its entirety. By the time the plant addition is completed, the Midwest plant will be the center of Admiral's refrigerator manufacturing, with only its smaller sized units being made under contract in St. Paul, Minnesota.

Admiral entered the refrigerator field in 1944 when it acquired Stewart-Warner's refrigerator and range business, recalled Baker. At that time, he pointed out, Admiral expended over a million dollars redesigning and re-tooling the "Dual Temp" refrigerator unit before going into production on it in 1945. In 1949, Baker added, the company spent over another million to make ready for its present line of streamlined refrigerators. The latter line features full-length cold storage space and full-width freezer compartments.

Sales this year "have been nothing short of phenomenal, and we have never been able to keep pace with demand," he commented, adding that the company hopes that the new operation will permit it to catch up with consumer requirements by 1951.

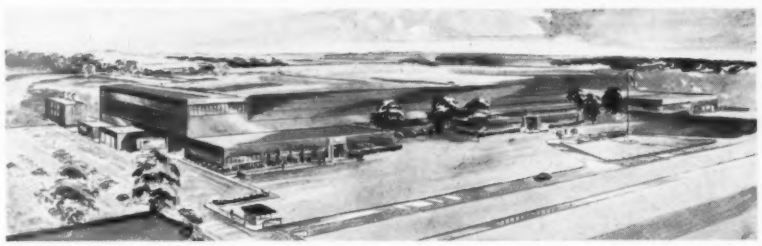
S. S. Battles, president of Midwest, is heading the operations at the Galesburg plant in the capacity of vice president of Admiral.

KALAMAZOO STOVE TO OFFER "HOME LAUNDRY PACKAGE"

Kalamazoo Stove & Furnace Co. is developing and will market a home laundry line "package" with washers in both standard and automatic styles, and dryers, according to Robert E. Mercer, sales manager of Kalamazoo.

At the same time, Mercer announced the company is now getting under way a distributor-dealer method of operation in 35 states for its line of ranges and refrigerators. Heretofore, Kalamazoo had stayed on a direct-to-dealer basis of distribution. A program of sales training, national advertising, and local newspaper cooperative advertising is also being planned, it was stated.

DEEPFREEZE BUILDING $4 MILLION REFRIGERATOR PLANT



A $4,000,000 plant is being erected in Lake Bluff, Ill., by the Deepfreeze Division of Motor Products Corporation for the purpose of producing its own refrigerators. It was stated that the plant, being built on a 57-acre site near the company's North Chicago plant, will be completed by December 1. Between 500 and 600 workers will be employed in the new plant.

L. J. Sorensen, vice president and general manager of Deepfreeze, stated that "the new refrigerator plant is a continuation of our expansion policy, following the completion of a $5,000,000 refrigerator parts plant recently completed in Marion, Ohio."

The company, since the first of this year, has been selling as a new appliance line, refrigerators, electric ranges and electric water heaters, all which have been manufactured by other factories on a contract basis. The new 234,000 square-foot plant is a step taken by the company toward making all of its own products.

The line of Deepfreeze home freez-

The photograph below shows the main floor of the Atlantic City Auditorium during the National Housewares and Home Appliance Exhibit held July 10-14. More than 500 manufacturers displayed 100 different classifications of merchandise on two floors of the Auditorium under the sponsorship of the National Housewares Manufacturers Association. Exhibitors contacted reported keen buyer interest and better than average booking of orders at the show.

ers will continue to be manufactured at the North Chicago plant where administrative offices will also be maintained, added Sorensen.

FRIGIDAIRE ANNOUNCES $12 MILLION EXPANSION PLAN

A $12,000,000 Frigidaire warehouse and factory building program has been announced by Mason M. Roberts, general manager of the Frigidaire Division and vice president of General Motors Corporation. The expansion program was revealed shortly after Frigidaire had built its 12,000,000th refrigerating unit.

The expansion program for the firm's Moraine City plant site, just outside Dayton, Ohio, is expected to be completed by early 1952. Construction work probably will begin late this summer.

"This expansion is necessary because our warehousing capacity is altogether inadequate and our production facilities are very crowded," stated Roberts. Under the new building program warehouse area at Moraine City would be more than doubled.

Roberts explained that the firm's main plant building was erected 24 years ago exclusively for the manufacture of electric refrigerators. "In the intervening years the business has expanded tremendously until today we are building more refrigerators than ever before, and in addition we are producing electric ranges, home laundry equipment, food freezers, electric water heaters, ice cream cabinets, frozen food merchandisers, refrigeration compressors, and other products in the same plant," he said.

"We have reached the stage where it is imperative from an efficiency standpoint that we have more factory space," Roberts explained. He added that the expanded facilities will provide greater flexibility in shifting production from one product or model to another in order to meet normal fluctuation in public demand.

HOTPOINT'S REFRIGERATOR PLANT ONE-THIRD COMPLETED — PRODUCTION CAPACITY SET AT 500,000 UNITS ANNUALLY

Construction work on the new refrigerator factory of Hotpoint, Inc., located at Fifty-Fourth Avenue and Sixteenth St., Cicero, Ill., is approximately one-third completed. Since construction was started on March 1, the progress has followed the schedule announced at that time by James J. Nance, president.

While construction will be completed in October this year, tooling and machine installations will require almost another year with first production employment for an initial force of 1000 persons starting in August, 1951. Nance said that the plant capacity will be approximately 500,000 refrigerators annually.

The building will front 600 feet on Sixteenth St., and approximately the same distance on Fifty-Fourth Ave., paralleling the company's new range plant.

Because of the height of specially designed presses, the main manufacturing building will be 40 feet high. The refrigerator factory will be designated as Hotpoint plant #8, with the other seven located in Chicago, Milwaukee, Chicago Heights, and Cicero.

NEW PRESIDENT OF EEI

Louis V. Sutton, president of Carolina Power & Light Co., was elected president of the Edison Electric Institute at the group's annual meeting held June 6-8 in Atlantic City.

KITCHEN CABINET GROUP QUALITY TESTING PROGRAM

Under its "Quality Seal of Approval," the Steel Kitchen Cabinet Institute has arranged for manufacturers to submit to an independent recognized testing laboratory stock samples of products. Manufacturers whose cabinets meet the rigid tests set up are permitted to use the Institute's seal of approval.

During the past few months the Standardization and Simplification Committee of the Institute designed a complete set of laboratory testing equipment which are said to insure uniformity in test procedure. With the completion of the new equipment, manufacturers are arranging to submit their products to Robert W. Hunt Co. Laboratories, Chicago, for retests on principal phases.

"The accurately engineered and carefully produced special testing equipment leaves no doubt that the 21 tests which must be met, before a steel kitchen cabinet manufacturer can use the Institute "Quality of Seal Approval, are thoroughly uniform," emphasized Arthur J. Tuscany, executive secretary of the Institute.

AMERICAN STOVE UNIT SALES UP 81 PER CENT OVER 1949

A unit sales increase of 81% for 1950 over the first five months of 1949 were reported at a meeting in St. Louis, June 14-16, of the sales committee of American Stove Company. Dollar sales were reported up 55% over the first four months of last year.

More than 50 plant, office, and special sales representatives were on

hand to hear the financial report, and witnessed the presentation of new commercial and domestic ranges, plus the first showing of the Magic Chef space heater line.

WELBILT STOVE NEW WAREHOUSE

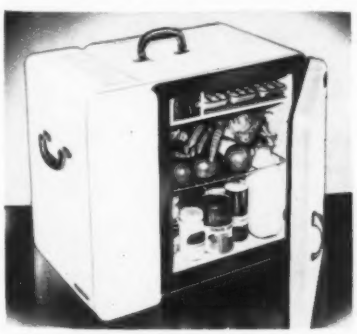
Welbilt Stove Co., Inc., manufacturers of gas ranges, recently announced the opening of a new warehouse in the San Francisco area. It was indicated that the new warehouse is part of the company's expansion program in key trading areas throughout the country in order to sell and service dealers on a direct basis.

OIL BURNER SALES GAIN 65 PER CENT OVER 1949

The possibility that 1950 will be the biggest year in the history of the oil heating industry is indicated by statistics on sales of oil burners during the first four months of this year, says the Plumbing and Heating Industries Bureau.

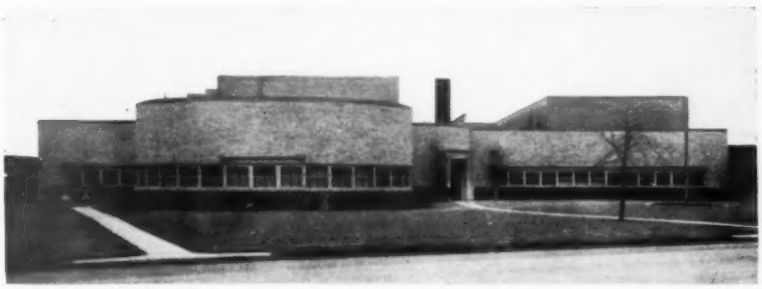
Sales of oil burners during the first one-third of this year were 65% ahead of 1949. If this ratio holds for the remainder of the year, the total for the year will be in excess of 900,000 units. It was pointed out that this figure would exceed the total of 880,000 units shipped in 1947 which was the best year the industry ever had.

PORTABLE ELECTRIC REFRIGERATOR



Freez-In Manufacturing Corp., Detroit, has revealed that they are now producing a new portable electric refrigerator which is 23″ wide, 19″ high, and 11″ deep. It is said to occupy about as much space as an ordinary table top radio, and fits into the trunk compartment of the average car. It can operate on a 6-volt automobile battery, 12-volt marine battery, or a 24-volt aircraft battery. It is available in white, blue-grey, and golden brown baked enamel finish.

INDUSTRIAL FILTER & PUMP MOVES TO NEW PLANT



The general offices and plant of Industrial Filter & Pump Manufacturing Co. have moved from 1621 West Carroll Avenue to a newly acquired location at 5900 Ogden Avenue, Chicago 50, Illinois.

It was stated that the larger manufacturing space provides facilities to meet an increasing demand for the company's filters, demineralizers, heat exchangers, corrosion test cabinets, unit spray washers, vulcanized linings, and molded-rubber products. The report adds that the new plant will enable the company to better its services to its customers.

GAS WATER HEATER SHIPMENTS REACH ALL-TIME PEAK

Shipment of automatic gas water heaters during the first five months of 1950 totalled an all-time record of 831,600 units, according to a report issued by Edward R. Martin, director of marketing and statistics, Gas Appliance Manufacturers Association.

It was stated that the 831,000 units shows an increase of 61.7% over the similar period of 1949. During the industry's peak year, 1947, 806,900 automatic gas water heaters were shipped during the first five months.

Preliminary reports indicated that 194,000 gas water heaters were shipped during May, and for the third straight month reached a new all-time high.

SERVEL REPORTS 83 PER CENT SALES RISE IN FIRST QUARTER

An increase of 83% in sales for the first quarter of 1950 over the corresponding 1949 period for Servel, Inc., was reported by W. Paul Jones, president, in a letter to stockholders.

Sales amounted to $15,178,553, compared with $8,300,987 in the same quarter a year ago. It was stated that results of operations indicated a favorable trend despite heavy extraordinary costs resulting from the steel and coal strikes.

NEW HUSSMANN WAREHOUSE

A new $600,000 warehouse is being erected in St. Louis, Mo., by Hussmann Refrigerator Co. on a 17½-acre site adjacent to the company's plant. The new addition will be completed by November. It was stated that more than 150,000 square feet of space has been added to the Hussmann factory in the past four years.

NATIONAL LEAD TO INCREASE TITANIUM PIGMENT PRODUCTION

National Lead Company will begin construction immediately on new facilities for the production of titanium pigments, Joseph A. Martino, president, has announced.

The additional capacity, expected to increase the present rate by 60,000 to 70,000 tons annually will be added first at the company's St. Louis plant. Depending on reasonably prompt delivery of essential equipment, first production will be

realized from the new facilities within a year and full production within eighteen months, it was stated.

This new expansion, it was pointed out, follows closely upon post-war titanium pigment plant expansion by National Lead and is in step with the substantial increase in the use of titanium pigments. With additional capacity for producing both the oxide and calcium type of pigment, the company expects to be able to satisfy the steadily increasing requirements of its customers.

SEEGER NAMES OUDERKIRK PRODUCTION SUPERINTENDENT

The appointment of Wallace F. Ouderkirk as production superintendent at Seeger Refrigerator Company, St. Paul, has been announced by John W. Seeger, vice president and general manager. Ouderkirk is a graduate of Wayne University and has been associated with Ford Motor Company and other manufacturers. He joined Seeger from Packard Motor Company where he was an industrial engineer.

Mr. Seeger also revealed the appointments of Kenneth C. Williams as assistant production superintendent, and Wynn Winkler as assistant chief engineer. Winkler has been in the refrigeration field for twenty years, working in research and commercial engineering with Frigidaire and Crosley. Williams previously was assistant general manager of Princeville (Ill.) Canning Co.

A. O. SMITH NAMES FLOYD EXECUTIVE VICE PRESIDENT

J. M. Floyd, vice president in charge of manufacturing, A. O. Smith Corporation, Milwaukee, has been named executive vice president, according to a recent report. It was stated that Floyd will take over general operation supervision of the company under the general direction of W. C. Heath, president.

Floyd had been in charge of manufacturing since he joined the A. O. Smith organization in 1936 from Bendix Aviation Corp., South Bend, Indiana. While serving with the latter firm he had been works manager of that company's Bendix products division.

SAMUEL KLEIN DIES

Samuel Klein, founder of Caloric Stove Corp., died May 22 at the age of 95. Born in Germany in 1855, he came to America in 1882 and started his stove business in 1890. He was active in the management of the company until about nine years ago, watching it grow to a nationally known manufacturer of gas ranges. The company occupies executive offices in Philadelphia and a research laboratory and manufacturing plant in Topton, Pa.

Engaged in the management of the business today are Mr. Klein's five sons: Nathan, Gustav, Julius, Harry W., and Meyer.

GAS ASSN. LEADERS UNITE FOR "COURT OF FLAME" CAMPAIGN

Discussing who will be the king of the "Court of Flame" program and who will be presented with the "Court of Flame" crown for sales of top grade automatic gas water heaters for 1950, (left to right) H. Leigh Whitelaw, managing director of the Gas Appliance Manufacturers Association, looks on while Hugh Cuthrell, president of the American Gas Association tries on the crown for size, while Stanley H. Hobson, GAMA president, and H. Carl Wolf, AGA managing director, add their comments.

These gas industry executives have just examined the gold and red jeweled crown which will be presented to the nation's top gas water heater salesman at the GAMA exhibition of gas appliances and equipment at the AGA annual convention to be held in Atlantic City, October 2-7.

COOLERATOR NAMES DOLLAND FACTORY SUPERINTENDENT

J. F. Dolland has been appointed factory superintendent for The Coolerator Company, according to an announcement by Corliss V. Little, manager of the firm's manufacturing division.

Formerly assistant superintendent of Seeger Refrigerator Co., in St. Paul, and production manager of Vaco Products Co., Chicago, Dolland will supervise all factory production of the Coolerator plants in Duluth, Minn., it was stated.

KRAFT CHEMICAL ADDS TO STAFF

Gerald G. Kraft, sales manager, Kraft Chemical Company, Chicago, has announced the appointment of Harry E. Stopek to a sales-service position, concentrating on the metal fabricating and finishing field.

Stopek received his degree in chemistry from the University of Chicago in 1945 after a year as an

exchange student at the University of South Wales, England. He was previously associated with General Electric Co. and Hotpoint, Inc. as a material and process engineer. His headquarters will be at Kraft's main offices in Chicago.

ATHENS STOVE SALES APPT.

F. E. Keane, for the past two years manufacturers representative in the Chicago area, has joined Athens Stove Works, Inc. as sales manager of the Chicago region, according to an announcement by F. O. Mahery, vice president and general manager of Athens.

MEACHAM TO CONTINUE AS PEI PRESIDENT

The Porcelain Enamel Institute, through Edw. Mackasek, secretary, has announced that F. L. Meacham will continue to serve as president of the Institute.

The announcement was made following Meacham's resignation from Chicago Vitreous Enamel Product Co. to join the Crosley Division of Avco Manufacturing Corporation as general works manager in charge of all manufacturing operations in its five plants *(July 1950 finish)*. He had been vice president and general manager of Chi Vit.

EASTERN ENAMELERS OUTING

The Eastern Enamelers annual outing and clam bake will be Sept. 9, at Elkwood Club, Alburtis, Pa.

BRITISH INDUSTRIAL FINISHES SHOW OPENS AUGUST 30

An Industrial Finishes Exhibition will be held at Earls Court, London, England, from August 30 through September 7.

FOOTE EXTENDS ENTRY DATE FOR $1000 LITHIUM CONTEST

Foote Mineral Company, Inc., Philadelphia, has announced that the closing date for entries in the Foote $1000 Lithium Award Program has been extended to October 15. Original research conducted between January 1, 1950, and June 1, 1951, can now be included, it was also pointed out.

The original time limits did not permit many students the opportunity to schedule studies involving lithium. It was pointed out that students now will have the 1950-51 school year to execute studies for participation in the program which has a double purpose of stimulating scientific research directed toward the use of lithium materials and of making the results of these studies available.

CENTRAL ENAMELERS OUTING

The Central District Enamelers fall outing will be Sept. 23, Alliance (Ohio) Country Club. Reservations must be in by Sept. 18.

AIEE HOLDS TECHNICAL CONFERENCE ON HOME APPLIANCES

The American Institute of Electrical Engineers held a special technical conference on home appliances, June 20, at the Cleveland Hotel, Cleveland, Ohio. Some 86 engineers representing more than 30 companies attended.

Subjects discussed at the meeting included the following: "Engineering Problems in Automatic Washer Design," by P. Eduard Geldhof, vice president, Whirlpool Corporation; "Appliance Design and Utility Growth," by Robert C. Hienton, general sales manager, Cleveland Electric Illuminating Co.; "Electric Range Unit Development," by E. N. Calhoun, president, Edwin L. Wiegand Company; and "Electric Range Maintenance and Repair," by W. R. Milby, assistant supervisor, customer service department, The Detroit Edison Company. Discussion sessions were held following the individual talks.

Shown in the photograph of the speakers and the general committee are: Front row, left to right, P. Eduard Geldhof, Whirlpool Corporation; E. N. Calhoun, Edwin L. Wiegand Company; Mr. McNiece, Detroit Edison Company; and T. H. Cline (conference chairman), Newark Stove Company. Second row, Robert F. Zimmerman, Frigidaire Division, GMC; J. R. Wickey, Clark Controller Corp.; R. S. Gardner, of AIEE headquarters, New York City; Robert C. Hienton, Cleveland Electric Illuminating Co.; and C. R. Reid, The Hoover Company. Third row, Robert C. Oetting, General Electric Company; T. H. David, Jr., Hotpoint, Inc.; Will T. Clark, Cleveland Electric Illuminating Co.; and Carl F. Scott, General Electric Company.

The meeting was sponsored by the AIEE Committee on Domestic and Commercial Applications in cooperation with the Cleveland Section. T. H. Cline is chairman of the Sub-Committee on Domestic Appliances, and R. C. Oetting is chairman of the Cleveland Section.

MARQUETTE NAMES HARTWELL EXECUTIVE VICE PRESIDENT

Warren E. Hartwell has been named executive vice president of Marquette Appliances, Inc., Minneapolis, according to H. J. Lange, president. Previously, Hartwell was associated with Marshall-Wells Co., of Duluth, for 22 years.

Marquette manufactures a complete line of refrigerators, home freez-

CONTROL COUNTS

ON THE DIAMOND—AND IN THE LABORATORY

5 OTHER GOOD REASONS FOR USING PORCELFRIT

1 SERVICE ENGINEERING—Our Service Engineers are available to make sure that PORCELFRIT works right for *your* product. You take no chances.

2 FEWER REJECTS—Rejects cut your profits and PORCELFRIT cuts rejects to a minimum.

3 EXPERIENCE—Since 1901 Ing-Rich has pioneered in porcelain enameling. We have learned a lot in that time—and our customers profit by it.

4 PLANT TESTING—Right in our own job enameling plant, under conditions of actual use, we use PORCELFRIT. When you get it, *it's right!*

5 IMPROVED SMELTING—Ing-Rich uses unquestionably the world's finest smelting method, the result of exhaustive research and experiment.

☆ Let a pitcher lose his control . . . and he's on his way to the showers.

The same unfailing control is just as necessary in the laboratory—or else you've got a batch of frit that's good only for throwing at stray cats.

Laboratory control is one department in which Ing-Rich really shines, thanks to our double-check system. Ing-Rich laboratory technicians are skilled, alert and resourceful. They *have* to be, because their frit developments are tested right here in our own enameling department before Ing-Rich customers ever get them. No alibis go; no excuses are accepted. You're *safe* when you specify Ing-Rich PORCELFRIT.

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PORCELFRIT
"The Plant Tested Frit"

INGRAM-RICHARDSON MFG. CO., OF INDIANA, INC.
OFFICES, LABORATORY AND PLANT
FRANKFORT, INDIANA

ers, electric and gas ranges, electric and gas water heaters, washers, ironers, and electric dryers, it was stated.

SEEGER UPS BOURNE

Philip G. Bourne, formerly purchasing agent, has been appointed manager of material control of Seeger Refrigerator Co., St. Paul Division, according to an announcement by John W. Seeger, vice president and general manager. It was stated that George W. Hamilton, formerly manager of material control, is now division sales manager.

MCFARLAND NAMED ENGR. MGR. OF G-E INDUSTRIAL HEATING DIV.

James L. McFarland has been appointed manager of engineering of the Schenectady (N.Y.) industrial heating engineering division of General Electric Co., it was announced by C. L. Ipsen, manager of the firm's industrial heating divisions.

A graduate of Texas A & M, McFarland joined G-E in 1913 as a student engineer on the firm's Test Course. In 1915 he entered the engineering department of the industrial heating divisions, and was named assistant division engineer in 1938, a post he held at the time of his recent appointment.

COOLERATOR NAMES RIPSTRA HEAD OF PROCESS CONTROL

John G. Ripstra has been appointed head of the process engineering section of the engineering department of The Coolerator Company, it was announced by R. E. Deaux, Coolerator chief engineer.

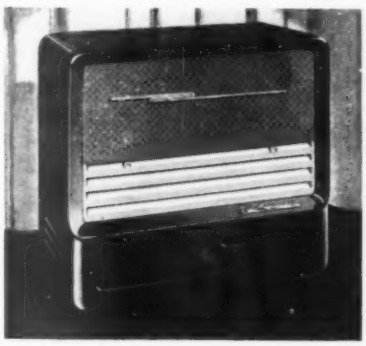
It was stated that Ripstra will be responsible for the process control of bonderizing, enameling, dehydration, charging of refrigerants, performance tests, and all processes pertaining to the quality of the company's finished products. He will also supervise the chemical laboratory.

Before joining Coolerator, Ripstra was service engineer for Gates Rubber Co.; chief chemist and process engineer for Hayes Mfg. Corp., Grand Rapids, Mich.; process control engineer for Florence Stove Co., Kankakee, Ill., and for Nash-Kelvinator Corp., Grand Rapids, Mich.

FIBERGLAS SALES APPT.

Owens-Corning Fiberglas Corporation, Toledo, has announced the appointment of James E. Higgins as manager of the Chicago branch sales office, succeeding Russell R. Galloway who resigned. Higgins had been manager in Atlanta, it was stated.

NEW MAGIC CHEF SPACE HEATER



Shown is one of American Stove Company's new console-type space heaters. The new Magic Chef line of oil and gas heaters consists of hi-boy and console, radiant and circulating units.

They are said to utilize a unique heating principle and combine the advantages of convection and radiation for increased heat diffusion. First public showing was at the Summer Homefurnishings Market.

L&H NAMES RODGERS MANAGER OF RANGE, WATER HEATER DIV.

R. W. Rodgers has been appointed manager of the electric range and water heater division of Lindemann & Hoverson Co., according to an announcement by E. A. Lindemann, president of L&H. Rodgers, successor to H. R. Singleton who resigned, formerly was with Nash-Kelvinator Corporation.

CYANIDES FROM NEW SOURCE BY CHICAGO FIRM

Kraft Chemical Company, Chicago, through Gerald G. Kraft, sales manager, has announced the addition to the Kraft line of potassium cyanide, copper cyanide and zinc cyanide. It was stated that these materials are being obtained through new production, which gives finishers and other commercial users a more flexible supply condition. The items named are companion products to the sodium cyanide which the Chicago firm and distributor of chemicals, colors and oils began to market earlier this year, and for which wide distribution is said to have already been built up.

PRESSED METAL INSTITUTE ANNUAL MEETING IN MONTREAL

The annual membership meeting of the Pressed Metal Institute will be held September 11 through 16 at Hotel Tadoussac, Saguenay and St. Lawrence Rivers, Montreal, Canada. Reservations should be sent to the Pressed Metal Institute, 13210 Shaker Square, Cleveland 20, Ohio.

PACIFIC BORAX ADDRESS CHANGE

M. H. Pickard, technical director, Pacific Coast Borax Co., has announced their Eastern address has been changed from 51 Madison Avenue, New York City, to 100 Park Avenue, New York 17, N.Y.

MEVIUS HEADS HYDRAULIC SALES FOR AMERICAN ENGR.

J. S. Bennett, vice president of American Engineering Company, Philadelphia, has announced the appointment of John C. Mevius, who for the past ten years has been sales manager of the company's materials handling division, to the post of sales manager of their hydraulic division.

Mevius, in addition to his new duties, continues to be responsible for materials handling sales, and will be assisted in hydraulic sales by G. A. Fleck.

HAMPEL NAMED GENERAL MGR. OF ODIN STOVE

K. C. Hampel, assistant treasurer of Odin Stove Manufacturing Co., Erie, Pa., manufacturers of gas and

electric ranges, has been named general manager of the company.

The appointment fills a position left vacant when R. F. Hofstetter was named president of Odin. It was stated that no successor has been named as yet to the position of assistant treasurer.

FERRO SALES APPOINTMENT

E. W. Dany, chief engineer, Ferro Enamel Corporation, has announced the appointment of C. L. Warner, of Haller Oven Co., Pittsburgh, as sales representative for Ferro in Western Pennsylvania. Warner will represent the Cleveland firm in the sales of industrial ovens, dryers, metal cleaning equipment, and complete synthetic finishing departments.

ATLAS POWDER UPS CRAIG

The appointment of C. W. Craig as manager of the North Chicago (Illinois) branch of Atlas Powder Company's industrial finishes department has been announced by G. B. Works, departmental general manager. Craig has been with the company for ten years.

ALLIANCEWARE BUILDING PLANT ON WEST COAST

Announcement has come to *finish* that AllianceWare, Inc. has property at Colton, California (55 miles from Los Angeles), and is installing fabricating facilities and a complete porcelain enameling plant.

According to C. J. Rodman, president of AllianceWare, the plant will be used for the production of bathtubs, sinks and lavatories. Washing machine tubs will also be produced.

AllianceWare also operates plants at Alliance, Ohio (home office) and Vancouver (for Western Canada); Crane SteelWare, at Quebec, serves Eastern Canada.

U. S. STEEL TO UP STEEL CAPACITY 1,660,000 TONS A YEAR

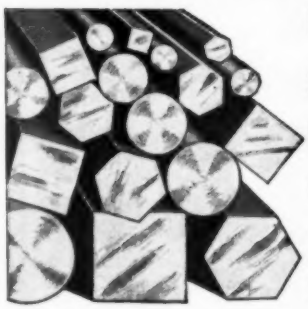
United States Steel will increase its steel-making capacity by 1,660,000 ingot tons annually through an improvement program to be instituted at the Pittsburgh and Chicago district plants of Carnegie-Illinois Steel Corp., its principal steel-making subsidiary, it was announced by Irving S. Olds, U.S.S. board chairman.

The new program will be pushed to completion as rapidly as possible, and should result in an increase of 1,215,000 tons in the annual steel capacity of United States Steel within a year. It is expected that the remainder of the program, now in the engineering stage, will make an additional 445,000 tons of annual productive ingot capacity available by the fall of 1951. The major part of the program will get underway immediately. The construction work connected therewith will not interfere with existing steel production.

It's MISCO for HEAT RESISTING ALLOYS IN ROLLED MILL FORMS

Sheets — Plates — Rounds ● Squares ■ Hexagons ● Flats — Angles L
Channels U Sections Pipe ○ Nuts ○ Welding Rod

Specify MISCO METAL for your Enameling Racks and Fixtures used at High Temperatures.



200 items of Rolled Mill Forms carried in stock for prompt shipment. Send for Stock List.

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ALLOY CASTING DIVISION
Michigan Steel Casting Company
1999 GUOIN ST. • DETROIT 7, MICH.
MISCO
One of the World's Pioneer Producers and Distributors of Heat and Corrosion Resisting Alloys

Protective Packaging Competition to Include Materials Handling Classification

Addition of a Materials Handling classification as part of the 4th annual Protective Packaging Competition to be held in Philadelphia, October 10-12, has been announced by the Society of Industrial Packaging and Materials Handling Engineers.

The competition, an annual event open to non-members as well as Society members, is held each year as a feature of the SIPMHE annual exposition.

The new classification is expected to attract an even greater array of competitive ingenuity than previous years when the competition dealt solely with shipping container design.

As in the case of Protective Packaging Classifications, the new Materials Handling Contest Division will offer cash awards as follows: 1st prize, blue ribbon and $100; 2nd prize, red ribbon and $50; and 3rd prize, white ribbon and $25.

The complete line-up of the Contest is as follows: Group 1, *corrugated or solid fibre boxes;* Group 2, *nailed wood boxes and crates;* Group 3, *wirebound boxes and crates;* Group 4, *cleated panel boxes;* Group 5, *general* (entries in this classification may be a combination of any materials used for shipping containers or for reinforcement); Group 6, *export packages;* and Group 7, *materials handling.*

YOUNGSTOWN TO BUILD FOUR NEW OPEN HEARTHS

The Youngstown Sheet and Tube Company plans to build four new open hearth furnaces and other facilities at its Indiana Harbor plant at East Chicago, Indiana, according to J. L. Mauthe, company president.

The new furnaces, with necessary facilities, will produce 550,000 to 600,000 tons of ingots per year, it was stated. After these furnaces are in operation, the Bessemer department at Indiana Harbor will be discontinued. As this produces about 300,000 tons of steel ingots per year, the net increase at Indiana Harbor will be 250,000 to 300,000 tons.

A new roll shop will be erected at the Indiana Harbor strip mill, and finishing facilities will be added for hot rolled sheets and strip.

With present ingot capacity of 4,082,000 tons, these additions, and other changes and improvements already made, will give the company an estimated ingot capacity of 4,500,000 tons.

MILLER NAMED TO NEW G-E POST IN MID-STATES DISTRICT

John J. Miller has been appointed manager of the industrial division, St. Louis office, of General Electric Co.'s apparatus department mid-states district, according to an announcement by H. S. Sherman, manager of the St. Louis office.

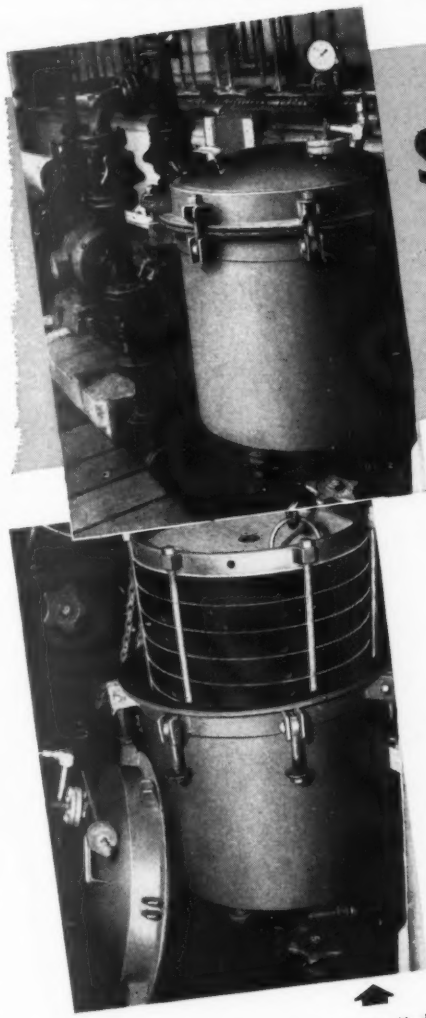
In his new capacity, Miller will be responsible for all sales to industrial companies in the St. Louis area of the department's newly-created twelfth sales district.

CORY ANNOUNCES FULL-SCALE PRODUCTION OF DISHWASHER

Cory Corporation, Chicago, has announced that full-scale production of its new electric dishwasher has begun at the company's main plant at 2100 So. Marshall Blvd. Production will be set at about 200 to 250 units per day. Previously, the company's dishwashers were made only on the West Coast, it was stated.

More News . . . . . Page 48 →

No repairs or maintenance in over 17,000 hours of 'round-the-clock operation



. . . yet this SPARKLER Horizontal Plate FILTER is still going strong

The kind of service Sparkler Horizontal Plate Filters have given the Gillette Safety Razor Company—efficient and trouble-free, even under most extreme conditions—is the kind of service that is vital to *every* filtering operation.

For example: A rubber-lined Sparkler Model 8-18 filter is used by Gillette in the continuous filtration of a 1000-gallon bright nickel plating solution. Now operating for approximately two years, this filter has been on a 24 hours a day, 7 days a week schedule — without any loss of operating time for repairs or maintenance. Also used in periodic batch carbon treatments of nickel solutions this unit, according to Gillette technicians, consistently delivers a brilliantly clear effluent, even though the plates may be packed solid.

Another Sparkler Filter employed by Gillette is a Model 8-6, stainless steel, portable unit. Used exclusively for cyanide type plating solutions, this Model 8-6 has proved particularly valuable for Gillette's gold plating operations since the patented Sparkler Scavenger Plate assures minimum loss of precious gold solution. Now operating almost six months for at least 2 hours daily, its performance has been satisfactory in every respect.

Top: Sparkler Model 8-18 filter shown installed in Gillette's plating department. Above: Same filter, with filter plate assembly being removed for cleaning

Left: Sparkler Model 8-6 stainless steel filter. This portable unit is used by Gillette to filter gold plating solutions.

Our Engineering Department (with more than 25 years' experience in every phase of filtration) is available for consultation without charge.

SPARKLER MANUFACTURING CO.
MUNDELEIN, ILLINOIS

$12 Million Plan Hails Frigidaire 12 Millionth Unit

Will More Than Double Space For 175 Models Produced at Moraine City

Distributor Sales Of Westinghouse Ranges Topping '49

1,500 Refrigerators a Day Planned in New Admiral Plant

$28 Million Spent For National Advertising: Appliances Lead Again

MAJOR APPLIANCES

Whirlpool Business Running 3 Times Ahead of Last Year

Servel Sales Rise 83% In Quarter, Jones Reports

Producer's Sales Of Durable Goods Increase in May

WASHINGTON, June 28.—Sales of durable goods manufacturers in May totaled $8,800,000,000, the Office of Business Economics estimated today in a preliminary, seasonally adjusted report. This contrasts with $7,300,000,000 in May, 1949, and 8 billion dollars in April.

Sales of all manufacturers in May amounted to $20,100,000,000 as against $17,100,000,000 a year earlier, and $18,500,000,000 in April.

End-of-May inventories for durable goods manufacturers were $14,200,000,000, as against 14 billion dollars in April, and $16,100,000,000 in May, 1949. For all manufacturers, end-of-May inventory totaled $31,500,000,000, as against $31,200,000,000 a month earlier, and $33,400,000,000 in May, 1949.

Peak Industrial Output Predicted

Washington (UP) — The Federal Reserve Board said that industrial

Laundry Sales In 5 Months Exceeded 1949

Nash Earnings Expected to Near Peak

DETROIT, June 27. — Earnings of Nash Kelvinator Corp. in the fiscal

Are you getting your share of this valuable market?

CHICAGO, June 28 . ---- Factory sales of household washers, dryers and ironers in the first five months of this year ran well ahead of the same period in 1949, according to industry-wide figures announced here today by the American Home Laundry Manufacturers' Association.

Sales of standard-size household washers also came close to equalling the comparison months of 1948, the industry's all-time record year. Dryer sales passed the total for all 1949 and ironer sales were at a rate exceeding that of last year.

Washer sales in the January-May period aggregated 1,680,057 units, an increase of 64.6 percent over 1,020,400 in the same months of 1949, and were within 12.4 percent of 1,917,018 washers in the comparison period of 1948. May washer sales were 304,640 units, down 8.5 percent from 333,072 units in April, and an increase of 42.4 percent over 214,000 in May, 1949.

Dryer sales in the five months aggregated 107,271, compared to 105,727 in all 1949, and an increase of 201 percent over 35,641 for January-May, 1949. May sales were down 35.9 percent from April, 16,122 compared to 25,140 units, and up 312 percent over 3,910 dryers in May, 1949.

Ironer sales in the five months amounted to 144,700 units, 5.8 percent more than 136,800 in January-May, 1949. May ironer sales totalled 27,400 units, compared to 31,600 in the preceding month, a drop of 13.3 percent, and an increase of 40.5 percent over 19,500 ironers in May, 1949.

xxxxxxx

This news release from the American Home Laundry Manufacturers Association tells the story of continued high production of washers, ironers and dryers.

Figure the quantities of raw materials, equipment and components required to meet these production schedules. Are you getting your share?

The home laundry represents one important segment of the Major Home Appliance and Allied Metal Products field that **finish** magazine covers completely with penetration to all key men.

Appliances are going places. **finish** is going places. Why not come along? You can cash in NOW through advertising in the only industrial trade magazine devoted specifically to this important field.

Dana Chase **PUBLICATIONS**

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CHICAGO 1, ILLINOIS
TELEPHONE CENTRAL 6-1229

NEW HEAD OF NORGE HEAT DIV.

C. S. Davis, Jr. has been appointed to the presidency of the Norge Heat Division of Borg-Warner Corporation. He formerly was vice president and general manager of the division.

REVEAL COLUMBIAN RANGE SALE

Goodwill, service parts and right to manufacture the Columbian range, formerly produced by The Keeley Stove Company, Columbia, Pa., have been purchased by a new company known as Columbian Stove Company.

In a letter to *finish*, T. S. Lockard, manager of the new organization, stated that "repair parts and service for Columbian ranges now in the field will be continued. Our organization will continue to sell Columbian ranges to the trade." Lockard formerly was general manager of Keeley.

The two buildings comprising the realty owned by the 68-year-old Keeley Stove firm were sold recently at a private sale. Machinery, enameling, foundry and other equipment was auctioned piecemeal by Harris Auction & Sales Co., of Cincinnati, Ohio.

PEMCO UPS GEORGE MARTIN

George D. Martin has been appointed assistant service manager for Pemco Corporation, according to an announcement by James B. Willis, Pemco service manager.

Prior to joining Pemco in 1948, Martin was director of the Procurement Command at Frankfurt, Germany. He holds a B.S. degree in ceramic engineering from North Carolina State College, and is a member of the American Ceramic Society and Keramos.

ROSS ENGINEERING MOVES OFFICE

As of August 1, the New York office of J. O. Ross Engineering Corp. will have its headquarters at 444 Madison Avenue, New York 22, N. Y. It was formerly located at 350 Madison Avenue.

PORCELAIN METAL PRODUCTS UNDER NEW OWNERSHIP

Porcelain Metal Products Co., of Carnegie, Pa., has been sold to a group of six Ohio and Pennsylvania businessmen.

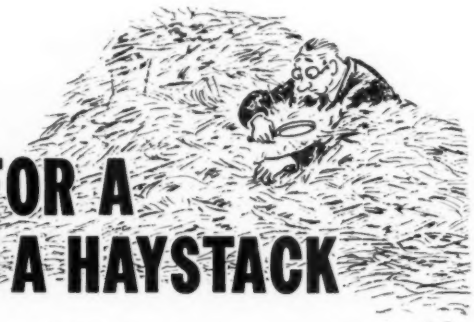
Three of the plant's present officials comprise the new group. They are A. F. Petan, plant manager since 1939, new vice president in charge of production; E. J. Ranz, present purchasing agent, new treasurer, and W. C. Klink, present supervisor of material control, who will serve in the same capacity.

New officials and part-owners of the company are: T. O. Warfield, of Lima, Ohio, president; J. R. Sweeny, of Alliance, Ohio, vice president in charge of sales; and H. G. Kniffin, of Dumont, N. J., Eastern sales representative.

The new announcement states that the company does porcelain enameling, steel fabricating, designing and engineering.

STANDARD VARNISH APPTS.

Carl Bauer, industrial sales manager, Standard Varnish Works, has



IT'S LIKE LOOKING FOR A NEEDLE IN A HAYSTACK

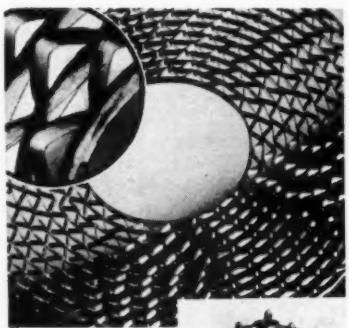
IT'S always difficult to find a needle in a haystack, so the saying goes, but it is just about as difficult to find iron in your finished wares if you use FRANTZ FERROFILTERS. The FERROFILTER acts like a fine tooth-comb, removing the invisible iron particles that are carried in your wet enamel and preventing them from appearing as spots in the finished ware. This proven method of removal of iron is simple and economical, making possible a greater percentage of acceptable goods and insuring increased salability of your products.

The heart of the FERROFILTER is a series of patented magnetized grids, with the proper opening sizes furnished in accordance with the consistency of the materials to be treated. The hundreds or thousands of feet of strongly magnetized grid edges comb and recomb the flowing materials, splitting the flow streams into thin elements and forcing each particle of iron to pass very close to them. As a result all ferrous particles are magnetically strained out.

FRANTZ FERROFILTERS are in successful operation in hundreds of plants throughout the world. They are doing their job and doing it well — in small plants, in large plants, and in great plants.

You, too, will find it advantageous to install FRANTZ FERROFILTERS in your millroom and other important production points. There are sizes and types to answer all your requirements. Why not write today for full information?

NOTE: For dry process enamelers: Our Dry FERROFILTER Model 68V is successfully removing iron from dry enamel in important plants.



Above — The heart of this Electro-magnetic FERROFILTER is the patented grid illustrated, of which 16 to 30 units represent hundreds of feet of sharp, magnetized collecting edges.

Right — Gravity type FERROFILTER. Excellent for glaze, enamel, and general use. Light and portable. Made in four sizes.

WET FERROFILTERS
Gravity-Pipeline-Underfeed
DRY FERROFILTERS
For dry process enamels and other ceramic materials

S. G. FRANTZ CO., INC.

BOX 1138 • TRENTON, N. J.

Authorized Representatives for the Enameling Industry

FERRO ENAMEL CORPORATION
4150 East 56th Street Cleveland 5, Ohio

CHICAGO VITREOUS ENAMEL PRODUCT CO.
1425 So. 55th Court Cicero 50, Ill.

announced the appointments of Stephen E. Sesnick and Ernest N. Field as technical sales representatives in New Jersey and Connecticut.

BEATTY AUTOMATIC WASHER

Beatty Bros., Ltd., of Fergus, Ontario, are planning to introduce an automatic washer. George Beatty, managing director, reported that company engineers are completing final details preparatory to going into production of the company's first automatic washer. It was indicated that automatic washer output will feature Beatty's 1951 production program.

WESTINGHOUSE MAN DISCUSSES PLATING BEFORE AES MEETING

Before the recent annual convention of the American Electroplaters Society, in Boston, G. W. Jernstedt, of Westinghouse Electric Corporation, discussed the mechanical, chemical, and electrochemical methods of leveling with PR current plating.

Jernstedt described the fundamental factors affecting leveling with PR plating, such as PR cycle, current density, thickness of deposit, agitation, solution composition, addition agent, and contamination.

Particular consideration was given to the elimination of buffing in the *home appliance* and automotive fields by polishing the base metal in the flat and by providing increased leveling in the plating bath.

APPROVE NESCO'S NEW NAME

Approval of "Nesco, Inc." as the new corporate name for National Enameling and Stamping Co. was granted at a recent special meeting of the firm's stockholders.

PORCELAIN ENAMEL PLUMBING WARE SHIPMENTS UP 56 PER CENT

Shipments of porcelain enameled steel plumbing fixtures during the first quarter of 1950 were valued at $11.9 million. Representing 19% of the plumbing industry's total of $64.1 million, this figure is $4.3 million, or approximately 56%, ahead of that of the corresponding period in 1949, according to the Porcelain Enamel Institute. Lavatories showed the largest gain with an increase of 19% or 9322 units.

NEW OFFICERS OF AES

New officers of the American Electroplaters Society are as follows:

President — William Neill, Columbus Metal Products Co., Columbus, O.

1st Vice President—Cleve Nixon, GMC Ternstedt Division, Detroit.

2nd Vice President—Frank MacStoker, Farrand Optical Co., N. Y.

3rd Vice President — Dr. George Swift, consultant, Boston.

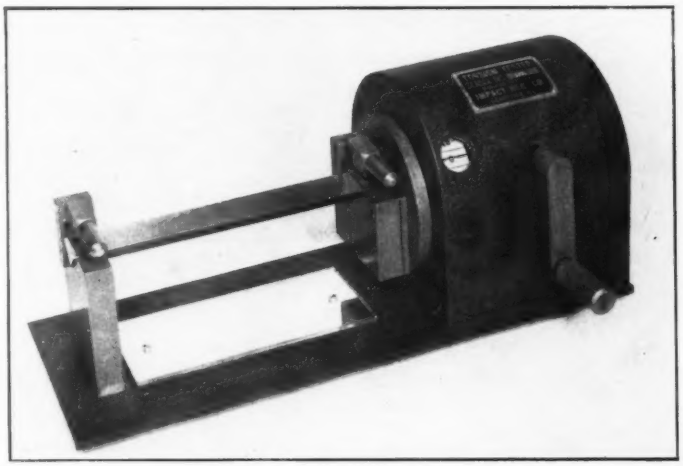
Exec. Secretary-Treasurer, Dr. A. K. Graham, Graham & Crowley Associates, Jenkintown, Pennsylvania.

DU PONT'S BURKE RETIRES

Alfred K. Burke, director of production of the Finishes Division of Du Pont Company, retired July 1, after more than 35 years with the company. It was announced that

It's New—THE TORSION TESTER

an invaluable tool for *every* enameling plant



AT LAST—a simple easy to operate, piece of equipment for testing the ADHERENCE of enamel to steel. Enamel technicians agree that a torsion test is the effective method for testing adherence for most enameled products.

Now you may know *before* your product is built whether you have proper finish adherence. Save production time and production money, and avoid unnecessary damage, by testing adherence *before* your valuable products are assembled.

An invaluable tool for laboratory testing and for enamel plant process control.

(Send for free literature describing operation of Torsion Tester.)

Built by the producers of the R-S Two-Way Ride Recorder

THE IMPACT REGISTER CO.
CHAMPAIGN, ILLINOIS

Lyman H. Priday, assistant director of production, will become director of production, and Dr. Harold E. Goldsmith, regional sales manager at Boston, will become assistant director of production.

Modern fabricating and finishing equipment speeds specialized production

(Continued from Page 25)

is a clear water rinse, and the fourth station is a dilute solution of chromic acid held at 160° to 180° F. This solution gives a slight etch to the metal surface, and provides an anti-rust coating of iron-phosphate to serve as a bonding agent for the baked finish. The fifth station consists of a dryer, to remove all moisture prior to finish application.

Electrostatic spraying used

Two complete automatic electrostatic spray booths (one for each conveyor line) are used to apply a single coat of metallic-base synthetic enamel to the clean parts. The booths are equipped with water-wash back walls, and are served by three guns each. The guns are mounted at top, bottom, and center.

In the electrostatic system, register parts are coated by passing through a 126,000-volt field. The electrostatic field is established between electrode wires located parallel to the conveyor and the grounded surfaces to be coated. The electrodes are negative at high potential, while the item being coated is positive and ground potential; hence, any particle sprayed into this field will become charged negative and tend to be forced to the positive grounded item by the force of the electric field. When this particle is deposited it immediately loses its charge and adheres to the item, thus building up a film of enamel to give the desired coating. The surrounding mist of sprayed metallic finish is pulled into every nook and cranny of the register part, thus simplifying what might be a comparatively difficult hand spraying operation. A friction roller on the conveyor slowly turns the parts as they pass through the electrostatic field.

No operators are required to man the electrostatic booths, but in the instance of floor registers, which have a special "duragold" overspray finish giving a "hammered effect," an operator applies the clear liquid to give the hammered effect on the wet finish coat as it emerges from the electrostatic field.

Overhead oven conserves space

A convection-heated hump-type overhead oven affords sufficient baking facilities, while at the same time conserving valuable floor space for storage of die sets and other important plant equipment.

The dual-conveyor oven is 100 feet in length and incorporates an 80-foot hot zone. It has a carefully balanced and zoned circulating system, which can be regulated to change intake of outside and in-plant air.

In the mechanical processing of any product, control of work flow is a vital cost factor. The "right" type of conveyor, correctly designed, constructed and strategically located can be a dividend-paying investment.

Such an installation is the Jensen Overhead Conveyor shown above, which permits the continuous conveying, dipping, draining and baking of painted tricycle parts in a Jensen Overhead Electric Radiant Heat Oven.

Whether your conveying requirements call for wire mesh, loop around, straight-line, stainless steel, canvas or rubberized belting makes no difference—*Jensen makes them all*, skillfully designing and engineering the installation to keep material handling costs at "rock bottom."

Many years of experience in designing and installing all types of mechanical handling systems gives authority to the advice and recommendations of Jensen engineers on *coordinated* conveying. *How can we help you?*

Jensen SPECIALTIES INCORPORATED
• Representatives in Principal Cities
9331 FREELAND AVENUE • DETROIT 28, MICHIGAN
MANUFACTURERS OF *ECONOMY-ENGINEERED* RADIANT HEAT EQUIPMENT
"DUAL HEAT" INFRARED OVENS • CONVEYORS • PAINT DIP TANKS

Air from the first 20% (incoming) end of the oven is discharged at the rate of 25% of the heated air. The balance of the oven provides for recirculation with a controlled addition of fresh air. Heat for the oven is provided by a gas heater. Oven temperatures are carried at 350° F., with a twelve-minute baking cycle for the synthetic finish used.

The end of the line

As finished register parts come from the baking oven on the overhead conveyors, they are transferred to an endless-belt inspection and packaging conveyor. Here they are inspected and assembled, checked for smooth operation, and then packaged in specially designed boxes with the style, size, and finish printed on the end flap. These individual boxes are then placed in shipping cartons for immediate shipment.

Additional facilities

Because of the heavy load required for the welding stations, the company has installed a 1000-K.V.A. transformer adjacent to the plant, which supplies to the welders on lines which carry no other load. Two of the welders are rated at 300 K.V.A. and two at 150 K.V.A., totaling a requirement of 900 K.V.A. direct feed. This direct feed provision eliminates current fluctuation at the welding stations. An additional 750-K.V.A. line provides electricity for all other plant uses. An automatic re-set cubicle will re-set three times if there is plant trouble, such as a serious short or lightning. In addition, there is a braker inside the plant and an automatic braker at each welding machine.

Water for the plant is provided by a 475-foot well.

Heat for the plant is provided by 13 circulating gas heaters rated at 20,000 cubic feet per minute each.

Centralized control board for finishing equipment

A single centrol control panel automatically controls the washing machine, conveyors, electrostatic spray booths, and temperatures in both the baking oven and the solutions in the washer tanks.

All possible safety devices have been included. If, for instance, a pilot goes out or a motor fails, microswitches prevent opening of gas line. If liquid or oven temperatures vary from the control zones set up, a horn blows and continues to operate until the difficulty has been corrected. The point of difficulty may be immediately located on the control board through a series of warning lights.

By combining this brief description with the accompanying photographs, it should be easy to see how it is possible to produce 6000 complete units per day in the comparatively small plant area provided. The organization has been given the most modern equipment and tooling, and the plant laid out in a closely integrated plan for specialized production.

The Lima organization is proud of the plant, its workmanship, and even plant cleanliness, which is assured through the use of portable vacuum sweeper equipment.

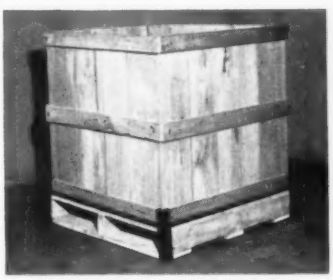
IT'S NEW— —
a low cost Collapsible Pallet Box

Here's a brand new money saver for in-plant storage and handling of materials and for outside shipments too. Its low initial cost will save thousands of dollars for plants using pallets in quantity.

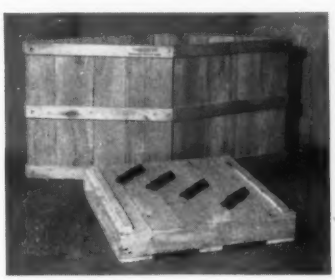
The new B-G Collapsible Pallet Box is light in weight but built strongly enough to handle weights up to 3000 lbs. and is sturdy enough to stand up under many repeated shipments.

The collapsible feature is made possible by the exclusive Bigelow-Garvey TIGHT CORNER hinge design used on all of our collapsible wood shipping crates.

Used as a storage box, a tote box or as a shipping container, you will like this sturdy but inexpensive addition to effective materials handling.



Above: Photo shows how pallet box is easily attached to any standard pallet by means of 4 corner irons and a single steel strap, either flat or round.



Right: Photo shows hinged box collapsed for storage or return shipment. Tops can be furnished if desired.

WRITE FOR COMPLETE DETAILS AND PRICES TO . . .

BIGELOW-GARVEY LUMBER CO.

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Program for annual PEI forum

twelfth annual shop practices forum to be held at University of Illinois

THE 12th annual Shop Practices Forum of the Porcelain Enamel Institute is scheduled for September 13, 14 and 15, at the University of Illinois, Urbana, Illinois.

Participation in the Forum is open to all individuals connected with or interested in the porcelain enameling industry.

The registration fee of $15.00 is payable at the registration desk by all those attending, excepting students and faculty. Proceeds from the registration are used to defray the Forum's expense and to publish the Forum Proceedings.

Early registration with the Institute for Forum sessions and hotel accommodations is urged. Write to the Porcelain Enamel Institute, 1010 Vermont Ave., N. W., Washington 5, D. C.

THE PROGRAM

Wednesday Morning, September 13

9:00 Registration

10:30 Meeting of Committees

Wednesday Afternoon, September 13

Presiding
Dr. A. I. Andrews
Head, Dept. of Ceramic Engineering
University of Illinois

1:30 Address of Welcome.....Dean W. L. Everitt, College of Engineering, University of Illinois

Response.....F. L. Meacham, Crosley Division, Avco Manufacturing Corp., President, Porcelain Enamel Institute

2:00 New Application Methods

Dry Drawing.....R. F. Roy, Gilron Products Company

Magnetic Separation.....John T. Roberts, Crane Company

Spalling.....R. S. McEvoy, University of Illinois

Ball Mill Grinding of Porcelain Enamel...O. H. Garlick, Paul O. Abbe, Inc.

Thursday Morning, September 14

9:30 Symposium: One Coat Porcelain Enamel Directly to Steel. .....Leader, D. R. Goetchius, Ferro Enamel Corporation

(Other industry experts will present papers on specific phases of this subject, and all panel members will answer questions from the floor following the presentations)

11:00 Symposium: Stress and Strains in Enamel Iron System. .....Leader, W. A. Deringer, A. O. Smith Corporation

(Other industry experts will present papers on specific phases of this subject, and all panel members will answer questions from the floor following the presentations.)

Thursday Afternoon, September 14

Presiding
Dana Chase
Editor and Publisher
finish

1:30 New Product Development

Porcelain Enameling on Aluminum.....C. Signer, The Kawneer Company

Harvestore.....Wesley G. Martin, A. O. Smith Corporation

High Temperature Coatings.....Prof. Dwight Bennett, University of Illinois

Statistical Design of Experiments.....George Warren, Research Fellow, National Bureau of Standards

Thursday Evening, September 14

Presiding
Dr. G. H. McIntyre
Ferro Enamel Corporation

6:30 Annual Forum Banquet, Urbana-Lincoln Hotel

Action is Power.....Carlyle Emery, Ruthrauff & Ryan, Inc. (Advertising)

Friday Morning, September 15

Presiding
R. F. Bisbee
Westinghouse Electric Corporation

9:30 Quality Control

Elementary Essentials of Statistics.....Walter Blickle, A. O. Smith Corporation

Statistical Quality Control and Its Application.....J. L. Barcus, General Electric Company

Safe Transit.....Paul W. Bush, Westinghouse Electric Corporation

Industry-Wide Research Program...Prof. F. A. Petersen University of Illinois

Friday Afternoon, September 15

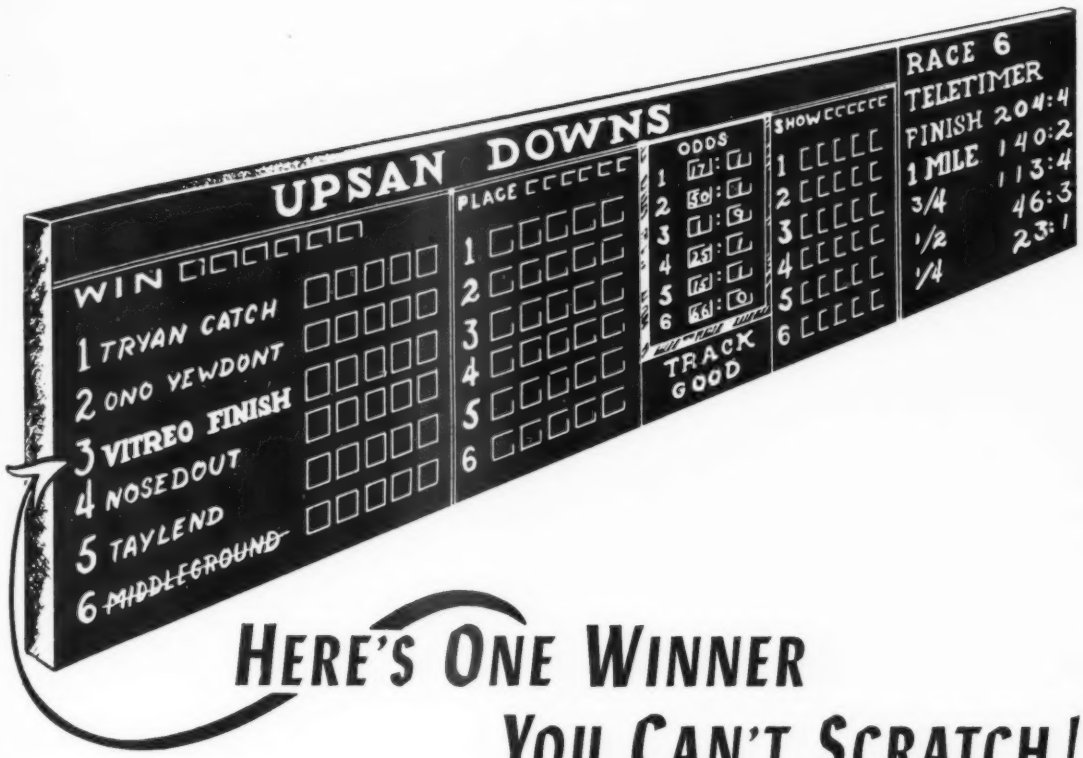
Presiding
Dr. G. H. McIntyre
Ferro Enamel Corporation

1:30 Board of Experts

Members of the Board:

H. W. Alexander, Frigidaire Division, General Motors
A. I. Andrews, University of Illinois
D. S. Beal, Youngstown Sheet and Tube Company
M. Bozsin, Ferro Enamel Corporation
G. A. Cairns, Macco Products Company
R. R. Danielson, Metal and Thermit Corporation
David Root, Hotpoint, Inc.
E. E. Marbaker, The O. Hommel Company
M. L. Pouilly, The DeVilbiss Company
N. H. Stolte, The Enamel Products Company
J. B. Willis, Pemco Corporation
J. L. McLaughlin, Chicago Vitreous Enamel Prod. Co.
M. H. Whitehead, Canton Stmpg. & Enameling Co.

4:00 Adjournment



HERE'S ONE WINNER YOU CAN'T SCRATCH!

Plan for the Lifetime Finish

And a certain winner every time is Porcelain Enamel—the one and only finish that will never show scratches or stains, will not yellow with age; and will always retain the original lustrous beauty that attracted the eye at time of purchase.

There must be good reason why more and more manufacturers are betting on the advantages of VITREO Porcelain Enamel—the Lifetime Finish. Table, cabinet and appliance producers are constantly increasing the use of Porcelain Enamel, not only for the tops of their products, but for entire exteriors. For only through the use of Porcelain Enamel can years of absolutely scratchless, stainless wear be assured.

It's no gamble—plan for the Lifetime Finish! By every test VITREO Porcelain Enamel is the best working surface for every purpose. Before you start production on any new item, call us . . . it may mean money and valuable time saved. Some of our die equipment can probably be used in making your parts.

VITREOUS STEEL PRODUCTS CO.

BOX 1791, CLEVELAND 5, OHIO *(Factory at Nappanee, Ind.)*

The roll quenching process

background information and the operating procedure for a method of "flaking" or "shattering" enamel frit without quench tanks

by Dr. G. H. McIntyre • VICE PRESIDENT AND DIRECTOR OF RESEARCH, FERRO ENAMEL CORPORATION, CLEVELAND, OHIO

THE idea of quenching porcelain enamel frit without contact with water is not new and a practical solution to the problem has long been a goal of enamel technicians and manufacturers. Various means of chilling the molten enamel quickly have been tried, such as blowing with air. This method was unsatisfactory because of an excessive quantity of fibres and beads which were formed. This gave exceedingly large bulking volume to the resultant product. Water quenching has been the most economical and practical process, both for batch and continuous types of smelters.

However, as the frit manufacturing industry turned to continuous methods of production, some other method of quenching or forming the solid frit particle became more desirable than ever. Water quenching has certain disadvantages, from a production standpoint, that are inherent in the process.

Passing the molten enamel through rolls is also an old process, but not used commercially in this country for enamel frit until recently.

Early claims include lowered water consumption and reduced milling time

During 1934 in Germany, and 1935 in the United States, Walter Heimberger, of Bayreuth, Germany, applied for patent protection on a method of quenching porcelain enamel without resorting to the conventional methods of bringing the molten mass into sudden contact with water. United States Patent 2,127,116 was issued to Heimberger on August 16, 1938, and assigned to Firmitana Metallkeramik. The advantages

DR. G. H. MC INTYRE

claimed for this method over that of water quenching were:

1. More favorable physical and chemical properties.
2. No increased volume as compared to the large increased volume obtained by the method of extruding with compressed air.
3. Requiring very little cooling water.
4. Lowered grinding (milling) costs.
5. Elimination of all drying steps.

Heimberger's process called for the catching of a thin jet of molten enamel between two water cooled rolls, which causes the enamel to be rolled out to form a continuous thin ribbon or series of plates. By rotating one roll slightly faster than the other, the ribbons or plates of enamel besides being rolled, were also torn producing some sections thinner than others which cooled rapidly. These sections were passed through the breakers arranged below the rolls.

In February, 1941, Messrs. Boyd, Roach and McNeal applied for a patent on a similar method of quenching porcelain enamel frit. A patent was issued and was assigned to American Radiator and Standard Sanitary Corporation in September, 1942, U.S.P. 2,294,828. The objects of this latter invention were:

1. To produce vitreous enamel in pure, uncontaminated form at a relatively high rate.
2. To produce vitreous enamel by means of a novel procedure involving simple but accurate control of the material and the product through all stages of production from molten to finished state.
3. To carry out the new procedure in a highly effective manner and without manual attention.

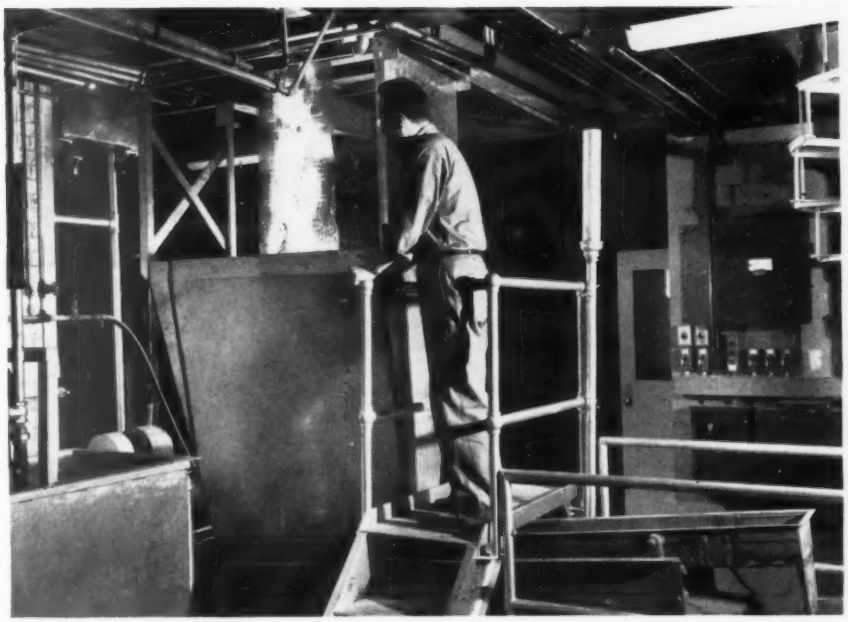
In this latter equipment the rolls were rotated at the same speed but being set close together, the ribbon of enamel was quite thin. The rapid cooling of the ribbon was accomplished both by the thin cross section and the application of a fine mist of water to the surface of the cooling ribbon of solid enamel.

Methods require continuous operation

Both methods are practical, but neither is satisfactory without completely continuous operation. Uniform feed of molten enamel glass to the rolls is essential for satisfactory operation. Large surges of molten glass feed, such as is obtained from a box smelter, cannot be tolerated for this method of quenching.

Research and development engi-

Left: Discharge end of continuous smelter. Protective grates have been removed to show the specially constructed steel rolls through which water flows. The molten glass, passing between the two rolls, is pressed into a continuous glass ribbon which drops to the floor below for further processing. Shown in the picture is C. A. Thomas, Jr., Ferro works manager.



Right: View of porcelain enamel glass ribbon which has passed between the water-cooled rolls. Now it will fall upon a stainless steel conveyor, also water-cooled, and travel through subsequent cooling, flaking, and bagging operations. Watching the sheet of glass is Rudolph Foster, smelter foreman.

Left: Shown is a view of the discharge spout. Protective grates cover the water-cooled rolls.

neers at Ferro Enamel Corporation began to study the problem early in 1940 as an adjunct to better methods for the production and packaging of porcelain enamel frits in conjunction with fully continuous and automatic enamel smelters. The advantages claimed by Heimberger were believed sufficiently important to justify considerable research time and money.

Now, after ten years of experimentation, fully automatic roll quenching has been adopted both for the automatic electric and fuel fired continuous smelters. The method is an adaptation of the ideas embodied in the Heimberger and Boyd, et al processes.

Operating procedure for "quenching" glass

The rolls are mounted directly below the smelter discharge spout and are of special construction, cooled internally by water at room temperature or below. The molten glass forms a pool on the two rolls and is cooled sufficiently to pass between them in a semi-plastic continuous ribbon about 1/32" in thickness. The width of the ribbon thus formed is controlled by the rate of discharge. The average glass (ground coat or cover coat) forms a ribbon about 20-24" in width per 1000 lbs./hr. of flow.

The ribbon drops several feet onto a vibrating stainless steel conveyor which also is water cooled at the contact point and slightly beyond the contact point.

The large flat plates produced by the shattering of the brittle glass ribbon are reduced to flakes which have an average particle size of approximately ¼"-⅜". These flake particles are transferred in a continuous stream along unique spiral vibrating conveyors to surge and automatic weigh hoppers. During the time of transfer the flakes are fully cooled to room temperature and any tramp magnetic material is removed by powerful permanent magnets which can be easily cleaned.

Effect of "roll quenching" on frit or "flakes"

For the enameler there are no disadvantages encountered in handling enamel frit prepared in this manner as the bulking volume (apparent density) and grinding properties are normal for any given type of glass. From all practical considerations there is no difference in warehousing or handling enamel glass in this form as compared to the conventional frit. There are, however, important differences to be considered.

The roll quenching of frit eliminates any possibility of contamination caused by variations in soluble salts left on the frit surface from differences in water temperature, ratio of frit to water volumes during quenching, and soluble salts in industrial water supplies. The variation of salts present in quenching water and subsequent concentration of these salts on the surface of the frit particles have a bearing on milling variations found in the average shop.

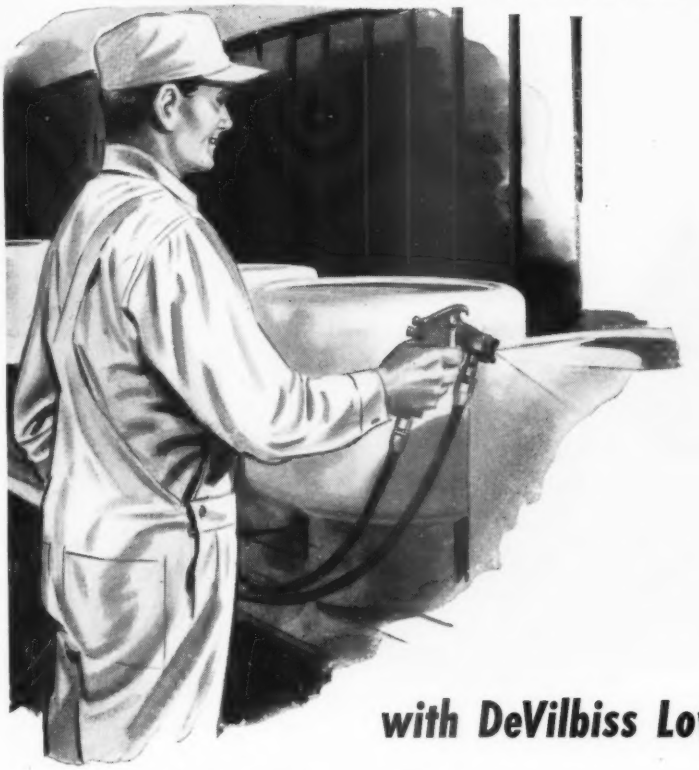
Troubles in firing of the enamels have been traced to uncontrolled variables encountered in the water quenching of the frit. This situation is particularly pertinent to so called "high speed" or "soft" ground coats. We have found that more uniform results in milling and firing of these ground coats are encountered with frit prepared by the roll quench process. The same applies to many types of cover coat enamels. Titanium acid-resisting sheet steel enamels are particularly affected by roll quenching.

Roll quenching has been shown to have a definite effect on the draining properties of ground coat enamels. The shape of the milled particles has a distinct effect on the quality of the drain.

The claims made by Heimberger, Boyd, et al, have been substantiated by production experience. In addition, freedom from contamination in all forms is a desirable feature of the process.

Facilities at Ferro are as yet limited for the manufacture of roll quenched frit. Major plant changes are required in equipment before extensive production of roll quenched frit can be undertaken.

DEVILBISS . . . Pioneers of Low-Cost Low-Pressure Ceramic Spraying



Save 4 ways

with DeVilbiss Low-Pressure Spraying

When new Low-Pressure DeVilbiss Ceramic guns were put into operation for a large steel finisher, the results were typical of what countless users find with this revolutionary development. The air pressure to the spray guns was cut in half, effecting a tremendous *saving* in air consumption. Lower air pressure and correspondingly lowered fluid pressure made a 30% *saving* in material consumption. The quality of work was improved *saving* rejects and rework. Production was speeded to *save* unit cost of finishing. Consider what savings in air—material—rejects and labor can mean to your production costs. And what's more, the change-over to this new principal is most inexpensive.

The switch to DeVilbiss low-pressure spraying generally means only replacing your present high-pressure guns with new, specialized Low-Pressure units, perfected to work better at more economical pressures.

We'll gladly send a DeVilbiss engineer around to survey your spray lines, show you how to switch to DeVilbiss Low-Pressure spraying for lowest costs.

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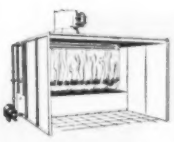
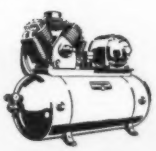


Spray booths

Spray guns



Air compressors

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DEVILBISS

Automatic spray systems

Hose and connections

Single strip of TAPE solves *EASY* Washer shipping problem!

How do you securely brace the emergency-release lever on an **EASY** Washer wringer for protection during shipment—without marring the fine enamel finish? Easy—with a *single* strip of "SCOTCH" Brand Filament Tape. This tough tape takes a firm grip on the glistening enamel surface, prevents safety device jarring loose. After shipment, tape removes quickly, cleanly without soaking. **EASY** reports an end to this source of trouble.

Try "SCOTCH" Brand Filament Tape on *your* strapping, re-inforcing or packaging problem. It's easy to apply—sticks at a touch! Rayon fibers reinforce backing just as steel rods reinforce concrete. You can count on it.

HANDY DISPENSER offers a quick, easy method for dispensing tough, tear resistant "SCOTCH" Brand Filament Tapes. Razor-sharp cutting edge retracts when not in use to protect operator. Handles widths from ½" to 1". Write to Dept. F-8 for complete information on both tape and dispensers.

Made in U. S. A. by MINNESOTA MINING & MFG. CO., St. Paul 6, Minn.
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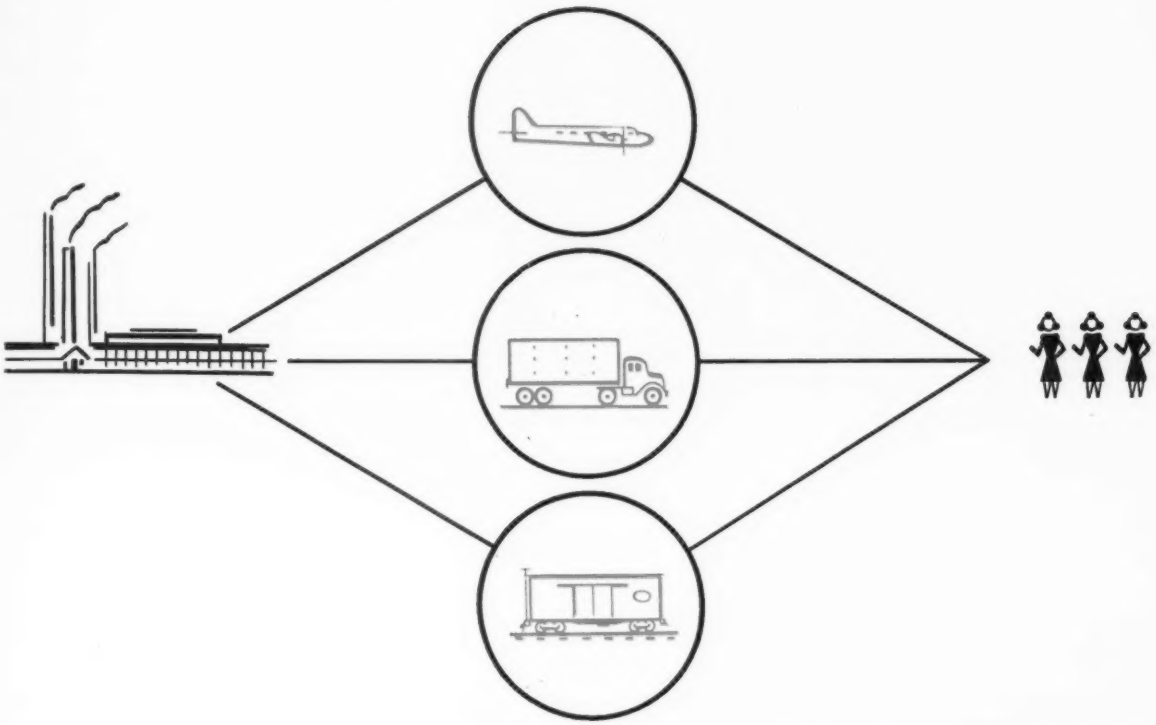
Safe Transit...

from assembly line to final customer



A monthly feature including:

Testing Information
N.S.T. Committee Reports
Packaging News
Case Histories

PRE-TESTED
SAFE TRANSIT
SHIPMENT

This PACKAGED PRODUCT meets the pre-testing standards established by the National Safe Transit Committee and will withstand ORDINARY transportation and handling hazards.

NATIONAL SAFE TRANSIT COMMITTEE

SAFE SHIPPING

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MAKE
SAFE HANDLING
YOUR JOB!

A low-cost first class ticket to safer shipping

ONE of the primary considerations of the National Safe Transit Committee in working out a system of pre-shipment packaged-product tests for finished metal goods was selection of testing equipment which would be low in cost and easy for the shipper to use. The Committee realized that if the goal of industry-wide safe shipping was to be achieved, the solution to the pressing problem of handling and shipping damage must be simple, practical and economical, as well as effective.

The final procedure worked out by the Committee, and dramatically proven over and over again in service, requires equipment which costs the shipper $2000 or less to install in his own plant. Manufacturers who have thus far installed the Safe Transit testing equipment report that its cost is fully repaid in the first few months of operation. In some cases, the equipment has immediately saved many thousands of dollars by locating defective shipability in a newly designed product or package *before* the product was put on the market.

The entire Safe Transit Committee, a group of representative industry experts, are available to the shipper for consultation and advice in setting up the Safe Transit testing program in his plant.

If a manufacturer does not ship a sufficient volume of goods to justify installation of the recommended equipment, or if for some other reason he feels that such installation is inadvisable, he may have his packaged goods Safe Transit-tested by a recognized commercial laboratory or package engineering firm. Thirteen such laboratories, strategically located across the country, have installed Safe Transit testing equipment and have been officially certified to perform the recommended pre-shipment tests. The facilities of these laboratories are available to any manufacturer in the geographical areas in which they are located.

Fifty-four companies have adopted the Safe Transit program. Reports indicate that the expense involved in the installation of required equipment pays dividends far out-weighing the original small investment, and in the light of figures for damage claims during the years since the war—representing huge dollar losses to shippers and carriers, and an unestimated loss of customer good-will—manufacturers of finished metal goods cannot afford to ignore the operation-proved solution offered by the National Safe Transit Program.

Manufacturers do not need to be members of the Porcelain Enamel Institute to cooperate in Safe Transit. The program is Institute-sponsored, but is open to the entire major home appliance and allied metal products industry, regardless of affiliation with any trade organization or other established industry group.

Safe Transit coordinating committee meets

THE National Safe Transit Committee held an all-day meeting at Westinghouse Electric Corporation, Mansfield, Ohio, on July 7. The meeting included a "school" for interested men who have indicated their willingness to spend their own time in "spreading the gospel" of the Safe Transit Program to manufacturers within the major home appliance and allied metal products field. The afternoon session included a meeting of the Coordinating Committee of the NST Program, and a tour of the packaging testing laboratory by those attending the school.

The entire meeting was under the direction of Ralph F. Bisbee, chairman of the Coordinating Committee, and the "school" was under the direction of L. A. Adams, chairman of the Manufacturers Coordinating Division.

The Westinghouse plant was an excellent one for holding such a meeting, because of the fact that the Mansfield plant was one of the earliest to participate in the National Safe Transit Program, and because of the extensive shipping by this company. Approximately 150 carloads of material enter and leave this plant each day, including 60 cars of incoming material and 90 cars of outgoing products.

During the morning program or "school", the chairman of each Division of the NST Program gave a brief report for his respective Division on progress to date and plans for the future. A consolidation of these reports would indicate that the entire program is rapidly gaining momentum, based on the voluntary efforts of the Coordinating Committee. All services by the individuals making up this committee are rendered without remuneration.

Through E. H. Shands, chairman of the Technical Planning Division, and Paul Bush, chairman of the Technical Planning Subcommittee, it was learned that additional testing equipment has been approved, so that the manufacturer will soon have a selection of producers from whom he can procure the necessary

testing equipment for certification under the Program.

Bush also gave an illustrated report showing the results of extensive transportation tests, including rails, trucks, and air transport. All tests of this nature conducted to date point strongly to the conclusion that the greatest hazards to packaged products are in the various *handling* operations incident to loading and unloading, storage, and delivery.

Dana Chase, chairman of the Educational Division, reported excellent cooperation among the many trade and business magazines in "spreading the news" of the worthwhile savings to be obtained through certification in this strictly voluntary program.

Although no attempt was made to list all of the many publications who have devoted generous amounts of space to the Program, special mention was made of a number who have recently carried feature stories or editorials: *finish* has, of course, carried *all* the important information pertaining to the NST Program regularly to the major home appliance and metal products field. *The Enamelist, Better Enameling, Ceramic Forum,* and *Ceramic Industry* were mentioned as representing the Program to the porcelain enameling and ceramic finishing field.

Among the packaging publications mentioned were *Packaging Parade* and *Modern Materials Handling.* Other trade publications included *Steel, Purchasing, Plumbing & Heating Journal.* Merchandising publications included *Retailing, Electric Refrigeration News, Electrical Merchandising, Chicago Market News,* and *Electrical Dealer.* House organs of such companies as Roper Corporation, Maytag, and many others are carrying the story to their dealers and distributors.

Members of the Coordinating Committee have appeared before many important manufacturers' association meetings, packaging shows, packaging engineering association, shippers' advisory board, American Trucking Associations, etc.

Car placard designed by the Loading Research Division of National Safe Transit Committee for use by manufacturers certified by the Committee.

Plans for the future

There has been considerable pressure on the Coordinating Committee to expand the Program to include a much wider group of producers than those considered within the present scope of the Program (major home appliances and allied metal products). It was decided by the Coordinating Committee that such expansion would be inadvisable at this time, but the problem is to be left open for future

Photo shows persons in attendance at meeting of National Safe Transit Coordinating Committee.

consideration. It is felt that all of the energy of the Committee and associated groups will be needed to get as near 100% participation as possible by manufacturers considered within the present scope of the Program, and that this goal will be attempted before further expansion is considered. It was pointed out, however, that full cooperation is given to any other organization or association interested in using the basic information contained in the pre-testing program for savings in its own field.

Latest Certified Companies

Admiral Corporation
Chicago, Illinois

Meadows Division, Thor Corporation
Bloomington, Illinois

The Fairfield Paper & Container Co.
Baltimore, Ohio (laboratory)

(see complete listing on page 68)

PHOTO COURTESY "DUTCH OVEN NEWS"

Applying Safe Transit Label — At the Globe American Corporation plant at Kokomo, Indiana, Walter Hagman (left), chief engineer, and Hank Owen (right), project engineer, watch Bud Schmitt, shipping clerk, apply a Safe Transit Label to a crated Dutch Oven range. The label indicates that the crated range meets the pre-testing standards of the National Safe Transit Committee and should withstand ordinary transportation and handling.

It is planned to step up the tempo of the educational program so that all within the present scope of the NST plan will know of the possible benefits to be derived through company participation. Many of the country's leading producers of appliances and metal products are now certified under the Program (See listing on Page 68), and it is fully expected at the present rate of certification that within another few months a high percentage of the products produced within this field will be certified.

Truckers discuss Safe Transit at annual meeting

AT the annual meeting of the American Trucking Associations National Freight Claim Council in Milwaukee, June 27-30, one session was devoted to a discussion of the National Safe Transit Program.

First speaker was Paul W. Bush, chairman of the Safe Transit Technical Sub-Committee. His subject was "What the National Safe Transit Program Means to the Carrier."

Bush presented a report showing results of extensive test shipments by trucks. The data secured from these shipments, said Bush, indicated that the greatest hazard to packaged products shipped by truck (also true for

to Page 70 →

Left to right: S. T. Meadors, National Freight Claim Council 2nd vice chairman, Red Arrow Freight Line, Houston, Texas; J. R. Mathews, NFCC 2nd vice chairman, Great Southern Trucking Co., Jacksonville, Florida; Robert J. Bayer, Traffic World; T. W. O'Neill, NFCC honorary chairman, Geo. F. Alger Co., Detroit, Michigan; Paul W. Bush (guest speaker), chairman of Safe Transit Technical Planning Sub-Committee, Westinghouse Electric Corporation, Mansfield, Ohio; Wm. P. Downey, NFCC chairman, Eastern Motor Dispatch, Inc., Columbus, Ohio; Ed Dowe, former NFCC chairman, Beaver Distributing Co., Beaver Dam, Wisconsin; M. I. Adams (representing shippers-receivers), traffic manager, Cutler-Hammer, Inc., Milwaukee, Wisconsin.

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PLYWOOD CRAVENEER WIREBOUND

CLEATED CORRUGATED

BOXES OR CRATES

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Consult with our packing engineers on product protection — Our designing and testing laboratory is at your service, without obligation.

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Transportation is part of every production line

can it be that our production experts, those wizards of invention and coordinated, precision, mass-output, have forgotten that the fruits of their labor are worthless until they are safely in the hands of their ultimate user or consumer?

by Hobart H. Young • FREIGHT CLAIM AGENT, PENNSYLVANIA RAILROAD, PHILADELPHIA

IT'S the shipments that are *almost* perfectly packed that cause the run on aspirin. The bad ones we can see. There really isn't much excuse nowadays for using containers that do not adequately protect the product. Progress in container designing and manufacture since the war has advanced so tremendously that at the present time there isn't an article we can think of, however delicate, that cannot be packed to survive even the most severe shocks that ordinarily may be encountered.

Take, as an example, the progress that has been made by fibre box manufacturers. During the war the average protective quality of fibre boxes for domestic shipping dropped to about 70 per cent of pre-war strength. Since then the protection standards for these boxes have been raised by tariff requirement, and recent policing checks by the Classification Committee show that very few fibre boxes fail to meet the specified bursting test. Indeed, a large percentage of boxes tested exceeded the minimum requirement by a good margin. Where the box otherwise is well made, this means an added factor of safety for its contents. But despite all this improvement — and all the laboratory testing and the great amount of study given interior packing by experts—the railroads were called upon to pay $13 million in 1949 for concealed damage to the contents of packages that appeared to be in good shape when delivered to the consignee. For furniture alone these concealed damages cost the railroads more than $4.5 million in 1949.

Why pay for good packing?

Why should anybody want to pay for good packing? Don't the railroads pay the claims? This must be the thinking of many shippers or there wouldn't be so much damage due to insufficient protection. Well, let's put our thinking cap on. Do profits come from damaged merchandise, or from long holdings in stock for repairs or replacement parts? Turning the question around, why is it that so many shippers pay so much attention to packing? What are their motives and objectives? Does good packing pay, or are those shippers unwittingly wasting a lot of money?

Author's Note:

Loss and damage cost American railroads (1949) about $114 million, or 16 per cent less than for the 1948 year. That's considered good progress. But it tells only some of the story.

Another and closer-to-current reflection of improvement is the reduction in the number of claims filed with the railroads. In 1949, some 3,745,785 new claims were filed, compared with 4,890,601 claims filed in 1948, a decrease of 23.4 per cent. And let me interject here that those 1,144,816 fewer claims presented having an estimated average value of $31.00 each, add up to a total potential savings of about $35 million — possibly the best indication of the combined effect of strenuous efforts that have been made by shippers, container and packaging manufacturers, and carriers to mitigate the losses arising from imperfect shipping.

The essence of it, it seems to me, is simply this: almost every article has competition in its field, and as that competition gets tougher it becomes increasingly important that the customer be satisfied, not only with the product, its selling points, its price—but with the kind of service that is part and parcel of the whole sales program. The customer does not have to put up with repeated bad-order deliveries. He has a wide choice—he can buy elsewhere—and he exercises that right freely. Nobody knows how many accounts are lost because manufacturers fail to pack (or load) so their goods reach the retailer ready for sale, but the total dissatisfaction expressed in this way could easily pay the difference between adequate and *almost* adequate packing many times over.

The proper application of the principles of selling

The principles of selling are the same, whether it be radios, soap, methods, or the attitude of a man to his job. We must cater to the wishes and the needs of the people to whom we are selling. Is there any essential difference between just trusting to luck in this important matter of packing, and giving short measure? Would a shipper succeed if he repeatedly shipped 11 instead of 12 to the dozen? The former, of course,

is not deliberate cheating, but if we believe that "repetition is reputation," flimsy packing can soon put the shipper into bad repute with his trade.

Why a Safe Transit program?

It was this sort of reasoning, I surmise, that prompted the manufacturers of home appliances to plan their National Safe Transit Program. At a meeting of the Porcelain Enamel Institute, a couple of years ago, a large stove buyer estimated that there was then about $10 million worth of stoves impounded for repair parts. For the year 1949 damage claims on appliances, sanitary ware, and cooking utensils amounted to $6,000,000.

Here's what Lewis Pilcher, executive vice chairman of the Freight Claim Division of the Association of American Railroads, said about this program in the February, 1950, issue of *finish:*

"There were times when more articles were held for repair parts than went to sales. Probably those losses exceeded railroad losses. Even a blind man could see that something had to be done. It was, and a more thorough and efficient job we have yet to see.

"The National Safe Transit Program was the answer. No, it wasn't inspired by the railroads. On the contrary, it took them by surprise—a very pleasant surprise, by the way. Here was a complete program, developed by some of the most competent industrial packaging, production, and materials handling engineers.

"Based upon extensive knowledge gained over the years, this program shows manufacturers how they can stop these losses before they occur—by testing the *packaged product* in the factory to make certain that it will withstand the risk of damage common to all forms of transportation and handling before and after shipment. No longer need weak designing or manufacturing errors or package deficiencies result in "epidemic" damages. Just about everything of this nature can be caught and corrected by the manufacturer when these test procedures are followed faithfully. No theory about this. Leading manufacturers who

"Drive thy business — let not that drive thee."

—Ben Franklin's Almanac, 1757

These days thee must work a month for the taxgatherer before thee begins to work for thyself. Keep a firm hand on the wheel of savings to bolster thy "nett after taxes."

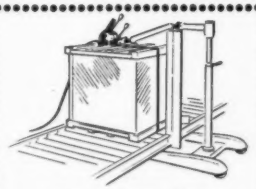
—Acme Steel Notebook, 1950

How long, Mr. Comptroller, since you broke "Miscellaneous" down into its multitude of sins? Do it—and you may uncover profit leaks that are subtracting real money from the profit column.

Most companies find plenty of such leaks to plug in packaging, shipping and materials handling operations. Acme sales engineers are specialists in finding these leaks—then plugging them. In 9 out of 10 cases, we can point the way to greater efficiency and good, solid thrift with Acme Methods and Acme flat steel strapping, Acme stitching machines and wire, and other Acme Steel products.

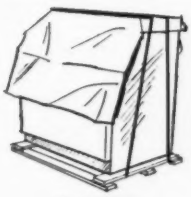
We have already proved this for the more than 50,000 customers we now serve. Two specific cases are reported here. It takes just a minute to read them and call us in.

Acme sales engineers, technical facilities and nationwide service are ready to start helping you. Reach for the telephone and call the Acme Steel service office nearest you. (There are 46 of these offices in the principal cities of the U. S. and Canada.) Or send the coupon for details on your special field.



Thor cuts damage 78%, packing cost 53%

Acme Steelstrap and reusable containers protect porcelain washing machine tubs en route from suppliers to Thor Corp.



Westinghouse saves 30 cents per unit!

Acme Steelstrap Method and a skid base eliminate interior blocking, reduce amount of padding on Westinghouse Laundromats.

ACME STEEL

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☐ **Shipping (Carload and L.C.L.)**—"Acme Unit-Load"—The story of reduced damage claims and better handling for shippers.

☐ **Packaging, Shipping, Materials Handling**—"Savings in Shipping" tells how to save money and safeguard customer good will with Acme Steelstrap.

☐ **Bag and Box Assembly**—"Profit by Stitching" demonstrates cost-cutting Acme Silverstitchers and Acme-Champion Stitchers.

☐ **Product Assembly**—"Acme-Morrison Metal Stitchers"—for savings in fastening metal-to-metal or metal-to-other materials.

☐ **Book Assembly**—"Acme-Morrison Book Stitchers" for savings in the graphic arts field.

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COMPANY _____

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CITY _____ ZONE _____ STATE _____

ACME STEEL CO. CHICAGO

have had the program in full operation have been accomplishing this very thing."

Standards for the Packaged Product

Essentially, the National Safe Transit Program sets up standards for the *packaged product* based on performance. An authority on such standards, Don L. Quinn, says:

"The final criterion of merit of any shipping container, including the method used to protect the article in the container, is performance in service and its costs.

"In the last analysis, it does not make any difference what kind or what may be the specifications of the materials used, if the container performs in handling, in shipping, and in storage without loss or damage, and does that at a fair and reasonable cost, it is and should be properly representative of the standard. In other words, the standard should operate to insure containers of those merits.

"It is obvious that the standard must (1) define what constitutes performance merits and (2) define a simple, practicable method by which those performance merits can be demonstrated, particularly to non-technical people. The Standard itself has nothing to do with costs except that its requirements must not be burdensome in cost in comparison with acceptable packaging now in use. I state with conviction that the cost factor is not a limitation of any consequence in attempting to formulate such standards."

To date, 24 companies* making appliances or enameled cooking utensils have been certified by the National Safe Transit Committee to use its complete test procedures for the packaged product. The prescribed tests include vibration, impact, and drop tests. In testing on the vibration table, for illustration, the package, ready for shipment, must withstand "1 g" vibrations, that is, the cycle of vibration must be advanced "until a thin piece of cardboard can be inserted between bottom edge of packaged product and the platform of the machine." This test, and the others, are designed to insure protection against the expectable and unavoidable hazards of handling before and after shipment, and during transportation.

Sound engineering and practical experience

All tests are based upon sound engineering calculations and years of practical experience with the distribution of appliances. When they are used faithfully, damage is held down to a very low minimum.

That the tests are not over-severe or require too much packing protection is shown by an experiment made at a claim-prevention meeting when a 300 lb. stove to which an impact register was fastened was lifted one foot at one end and then that end dropped to the floor. The impact recorded was equal to the shock created when a car moving 12 m.p.h.

* (when paper was prepared — more than twice as many at publication date)

FIBER-and-STEEL STRAP CUSHIONS AS IT BINDS

For Internal Bracing

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Prevents Shipping Damage

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Cuts Shipping Costs

FIBER-and-STEEL is steel strap with a cushion of protective Kraft paper around it. You can apply FIBER-and-STEEL directly on the enameled surfaces of stoves, refrigerators and other similar products with *no cushioning needed* between the product and the strap. The outer layers of Kraft paper protect the surface. The inner layer of steel strap binds with a slip-proof grip.

FIBER-and-STEEL saves time and materials in packing, makes uncrating easy, and leaves no adhesive stains. It is secured with a soft aluminum Gerrard seal.

WRITE OR WIRE TODAY
FOR A TEST DEMONSTRATION
IN YOUR PLANT

Strap calculator. Write for your free copy.

A. J. Gerrard & Co.

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(Chicago Suburb)

strikes another car. Despite all the employee training that is being done, there can be little doubt that stoves and other enameled articles get too many shocks of this magnitude in factory, warehouse, and transportation handling.

Manufacturers of vitreous and enameled sanitary ware, which is classified in the claim record as "plumbers' goods" have so far not come into the National Safe Transit Program, although claim payments for these commodities are running exceedingly high. For the first half of 1949, claims paid on carload shipments of plumbers' goods amounted to $401,443, an average of $45.23 per car originated, compared with $21.35 per car for the corresponding period of 1948. These claims equalled 10 per cent of the transportation charges on this traffic for the first 6 months of 1949. Doubtless some of the manufacturers of plumbing ware are giving a great deal of effective attention to packaging and loading. If all would adopt the test schedules recommended by the National Safe Transit Committee, the claim statistics, I think, would look a lot better. . . .

Lag in claim statistics

In presenting figures it should be understood that there is a time lag of several months between the date of shipment and the payment of the claim, hence these statistics do not portray accurately what the damage amounted to in any given period. It could well be that the condition is currently better than as indicated. This method of computing the losses, nevertheless, is the only one that can be used.

On the brighter side were consistent reductions in claims paid on less carload shipments in all categories. Comparing the year 1949 with 1948, the decreases were: 24.5 per cent on plumbers' goods; 29.1 per cent on stoves; 25.5 per cent on enamelware and washing machines; and 21.7 per cent on refrigerators. Unfortunately, we do not know the volume of shipping. If, as I believe, as much headway has been made as indicated, it would not be surprising. For the railroads have been digging into their freight house employees, perhaps more than anything else, that enamel is glass, and every kind of enameled ware must be handled with kid gloves. It looks like the great amount of training and educational work is taking root.

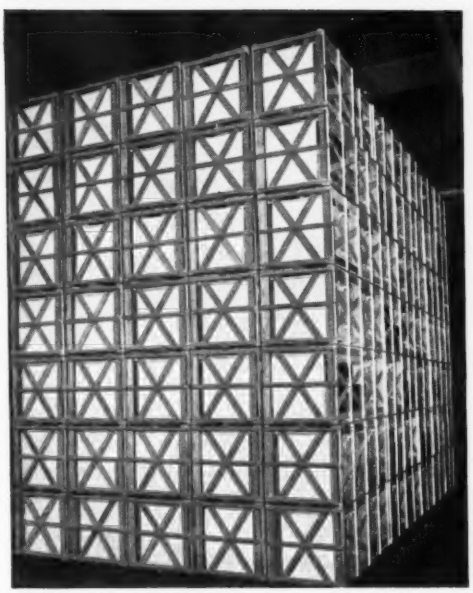
I appeal, most earnestly, to all makers of home appliances to give thoughtful consideration to the great benefits to all concerned — shipper, customer, carrier—that would come from universal adoption of the National Safe Transit Program. Any lingering doubts would, I am sure, be resolved in favor of the program if those who are hesitating would at least inquire of the leading firms which have had the program in full swing what their experience with it has been. Not one firm, as far as I know, that has adopted the plan, has given it up.

Adapted for *finish* from a talk before the Material and Equipment Division at the Annual Meeting of the American Ceramic Society.

WEYERHAEUSER CRATES

STRENGTH TO SUPPORT LOADS

...NO CRUSHING OR SAGGING



● Engineered for adequate strength, Weyerhaeuser Crates protect their contents from damage under heavy loads. They withstand sagging and crushing under extreme weights. Thus, your products, enclosed in Weyerhaeuser-designed Crates can be safely stacked. This simplifies handling; cuts storage space costs.

Diagonal bracing, the strongest known, is used for Weyerhaeuser Crates. Corners are nailed to assure strong joints and rigidity. The open design permits full product visibility for quick inspection. For low cost assembly, the joining frame members of the crates are built of soft hardwoods. These soft hardwoods receive nails without costly pre-drilling and without splitting. Crates are shipped in sections . . . strapped for palletized handling or in bundles for one-man handling.

For complete information, write or phone.

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INDUSTRIAL WOOD PARTS DEPARTMENT

Room 2134 • 400 West Madison, Chicago, Ill.

Companies cooperating in Safe Transit program

THE following companies are certified under the National Safe Transit Program. They are privileged to use the N.S.T. Label.

Admiral Corporation
Chicago, Illinois
American Central Div., Avco Corp.
Connersville, Indiana
American Stove Company
Cleveland, Ohio
American Stove Company
St. Louis, Missouri
Andes Range & Furnace Corporation
Geneva, New York
Apex Electrical Manufacturing Co.
Cleveland, Ohio
Appliance Manufacturing Company
Alliance, Ohio
Automatic Washer Company
Newton, Iowa
The Bellaire Enamel Company
Bellaire, Ohio
Belmont Stamping & Enameling Co.
New Philadelphia, Ohio
Caloric Stove Corporation
Topton, Pennsylvania
Canton Stamping & Enameling Co.
Canton, Ohio
Central Rubber & Steel Corporation
Findlay, Ohio
Chambers Corporation
Shelbyville, Indiana
Conlon Bros. Mfg. Co.
Chicago, Illinois
Conlon-Moore Corporation
Chicago, Illinois
Cribben and Sexton Company
Chicago, Illinois
Crosley Division, Avco Mfg. Corp.
Richmond, Indiana
Crunden Martin Manufacturing Co.
St. Louis, Missouri
The Dexter Company
Fairfield, Iowa
Federal Enameling & Stamping Co.
Pittsburgh, Pennsylvania
The Fletcher Enamel Company
Dunbar, West Virginia
The Floyd-Wells Company
Royersford, Pennsylvania
General Electric Company
Erie, Pennsylvania
Globe American Corporation
Kokomo, Indiana
Hardwick Stove Company
Cleveland, Tennessee
Hotpoint, Inc.
Chicago, Illinois
International Harvester Company
Evansville, Indiana
Kaiser Metal Products, Inc.
Bristol, Pennsylvania
Landers, Frary & Clark
New Britain, Connecticut
A. J. Lindemann & Hoverson Co.
Milwaukee, Wisconsin
Lisk-Savory Corporation
Buffalo, New York
Malleable Iron Range Company
Beaver Dam, Wisconsin
The Maytag Company
Newton, Iowa
Meadows Division, Thor Corporation
Bloomington, Illinois
Moffats, Limited
Weston, Ontario, Canada
The Moore Enameling & Mfg. Co.
West Lafayette, Ohio
Murray Corporation of America
Scranton, Pennsylvania
Murray Manufacturing Company
Murray, Kentucky
Nash-Kelvinator Corporation
Grand Rapids, Michigan
Nashville Division, Avco Mfg. Corp.
Nashville, Tennessee
National Enameling & Stamping Co.
Milwaukee, Wisconsin
Norge Division, Borg-Warner Corp.
Effingham, Illinois
Norge Division, Borg-Warner Corp.
Herrin, Illinois
Norge Division, Borg-Warner Corp.
Muskegon Heights, Michigan
Perfection Stove Company
Cleveland, Ohio
Philco Corp., Refrigerator Division
Philadelphia, Pennsylvania
Republic Stamping & Enameling Co.
Canton, Ohio
Geo. D. Roper Corporation
Rockford, Illinois
A. O. Smith Corporation
Kankakee, Illinois
Speed Queen Corp., Ironer Division
Algonquin, Illinois
The Tappan Stove Company
Mansfield, Ohio

PRE-TESTED
SAFE TRANSIT
SHIPMENT
This PACKAGED PRODUCT meets the pre-testing standards established by the National Safe Transit Committee and will withstand ORDINARY transportation and handling hazards.
NATIONAL SAFE TRANSIT COMMITTEE
SAFE SHIPPING
1010 VERMONT AVE., N.W. WASHINGTON 5 D.C.
MAKE
SAFE HANDLING
YOUR JOB!

Thor Corporation
Chicago, Illinois
United States Stamping Company
Moundsville, West Virginia
Westinghouse Electric Corporation
East Springfield, Mass.
Westinghouse Electric Corporation
Mansfield, Ohio

Certified Safe Transit Laboratories

Atlas Plywood Corporation
Lawrence, Massachusetts
Chicago Mill and Lumber Company
Chicago, Illinois
Container Laboratories, Inc.
Chicago, Illinois
Cozier Container Corporation
Cleveland, Ohio
The Fairfield Paper & Container Co.
Baltimore, Ohio
General Box Company
Chicago, Illinois
The Hinde & Dauch Paper Company
Sandusky, Ohio
Inland Container Corporation
Indianapolis, Indiana
International Paper Company
Georgetown, South Carolina
Ohio Boxboard Company
Rittman, Ohio
Package Research Laboratory
Rockaway, New Jersey
Packaging Service Corporation
Wyncote, Pennsylvania
Don L. Quinn Company
Chicago, Illinois
U. S. Testing Company, Inc.
Hoboken, New Jersey

What is so right about this picture?

IS IT THAT Dad's finally retired . . . the old alarm clock gagged for good?

Is it because now Mom won't have to watch him leave for the office any more, looking just a little bit tired?

Or is it because now Dad and Mom will be starting an especially happy time of life *together?*

We think it's all these things—all the things that are only made possible by financial security.

Nearly everyone seeks financial security, but *far too few* find it. That's because financial security seldom is achieved without a *sound, carefully executed* savings plan!

U. S. Savings Bonds offer you two absolutely safe, automatic plans for saving: The *Payroll Savings Plan* where you work or the *Bond-A-Month Plan* where you bank.

By signing up for one or the other of these plans, U. S. Savings Bonds are purchased for you out of your savings or income . . . automatically. You *can't* forget to save . . . your saving is done for you! And remember, U. S. Savings Bonds pay you *4 dollars for every 3* invested, in ten years.

Start planning your own retirement today!

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3" to 5" inclusive, per inch	8.50	7.50	6.50
6" to 9" inclusive, per inch	7.50	6.50	5.50

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Address reply to Box 850, c/o *finish*, 360 N. Michigan Ave., Chicago 1, Ill.

Truckers discuss Safe Transit

→ *from Page 62*

other methods of transportation) is in the various handling operations incident to loading and unloading the trucks. The truckers were urged to continue their fine work in educating their employees on the proper handling of packaged products.

It was brought out that *ATA Freight Claim Bulletin No. 123*, recently issued, *was devoted in its entirety to the National Safe Transit Program.* The bulletin contained complete information on the NST testing procedures for Projects 1 and 1-a, a color reproduction of the NST Label with accompanying information on which manufacturers are certified to use the Label, and a message to truckers that their part in the program is "*Perfect Handling.*"

Willard S. Mielziner, president, The Impact-O-Graph Corporation, was another guest speaker. His topic was "Use of Three-Way Impact Records to Prevent Damage." He pointed out that the carriers can use these records to eliminate the problem of "proper placing of responsibility for hidden damage" on packaged products.

Improved Sag Resistance
makes Thinner Gauges Practical

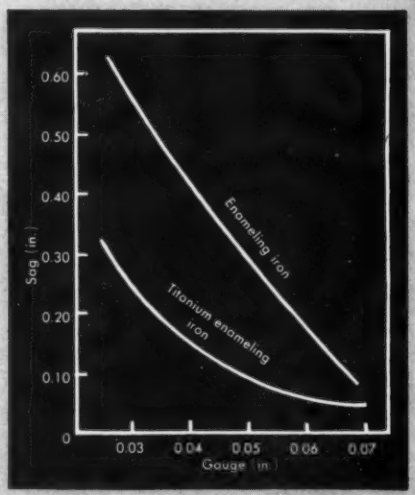
TITANIUM IRON for vitreous ENAMELING

The improved sag resistance of Titanium-bearing Enameling Iron makes it possible to avoid firing-distortion with lighter gauge sheets. This is a worthwhile economy that enamelers are using to advantage. In addition to sag and warp resistance, Titanium Enameling Iron, containing sufficient titanium to stabilize all the carbon, offers other desirable properties:

1 **GROUND COATS ELIMINATED:** Under proper shop conditions, cover coats may be applied directly to the base metal. These thin opaque coats reduce the hazards of chipping and breaking. Adhesion is excellent.

2 **FISHSCALING AND BOILING REDUCED:** During years of research and production, not one case of fishscaling has been reported. Blisters in the finished enamel are also eliminated.

3 **PRODUCTS MORE ATTRACTIVE:** In fabricated shapes warping, wrinkling and stretcher strains are avoided because of the increased sag resistance and excellent drawing qualities of Titanium Enameling Iron.



The Titanium Alloy Mfg. Division developed this new enameling process and produces the titanium alloy used in the manufacture of this enameling iron. For samples see your steel supplier. Detailed technical information may be obtained from our field engineers by writing to our New York Office.

TAM PRODUCTS
Registered U. S. Pat. Off.

TAM is a registered trademark

TITANIUM ALLOY MFG. DIVISION
NATIONAL LEAD COMPANY
Executive and Sales Office: 111 BROADWAY, NEW YORK CITY · General Offices, Works, and Research Laboratories: NIAGARA FALLS, N. Y.

Importance of pre-testing to appliance production

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machine flexes the hoses to simulate the actual wear they would get under operating conditions in the home.

Engineers are also able to provide conditions considerably more extreme than an appliance would meet in home operation. In a specially constructed room, refrigerators are subjected to temperatures of as much as 110° F., and a relative humidity up to 100 per cent. Here each part of the refrigerator — the wiring, compressor, condenser, control, insulation, cabinet finish, etc.—is checked to determine durability and function under extreme climatic conditions.

The testing laboratory has a mechanism that opens and closes electric range doors thousands of times. This device determines the amount of wear on the hinges, hinge pins, bearings, rollers, and door springs. From this test it has been learned that each door has a minimum life expectancy of 50,000 openings and closings.

When an innovation such as the pushbutton switch was incorporated on the new ranges it had already been thoroughly tested by an electrical apparatus which determines the durability of the separate parts. Testing on this device revealed that the minimum life expectancy of the pushbutton switch was 15 years or 60,000 cycles.

Another important range test is the electrical safety check. When testing, the engineer applies 900 volts of electric potential to check the insulation of the wiring, switches, etc. Range models are given an Underwriters' test which determines the safety margin of panel temperatures. All Hotpoint ranges conform to the Underwriters' limits, thus allowing flush installation of range against combustible walls and cabinets.

"WELL, J. K., THIS IS A SURPRISE!"

Reflectometer checks washer efficiency

One of the most functional tests that can be given a clothes washer is by means of a reflectometer which analyzes samples of materials that are washed in the machine. Cloth samples, four inches square, are rubbed in carbon, tallow or oil and tested by the reflectometer before and after washing. Increase in brightness of the sample determines the efficiency of the machine.

Fast moving parts, such as those in the automatic washer, are examined under a stroboscopic light to detect imperfection in the operation of the parts. The light, adjustable to produce several hundred flashes per minute, when focused on a moving object under certain prescribed conditions, gives the illusion of stopping motion at a desired point or showing it as though in slow motion. When the automatic clothes washer or dishwasher is operating, engineers can follow the complete washing cycle each second during the test.

Other ingenious quality tests check finishes, as well as the strength of various parts. Stainless steel dishwasher racks, for example, support a load of more than 100 pounds under test, or approximately four times the weight of the largest load of dishes.

While quality testing requires considerable expense, it is insurance for the reputation of the dealer, distributor, and manufacturer.